July 1975

Smithsonian

A rare voyage to the far north by a private yacht (p. 38), here dwarfed by Greenland iceberg

On our 11th anniversary,
instead of going to work,
we came to the city and played like
two little kids all day long.
And after the penny arcade,
two Bogart films, too many hot dogs
and ice cream cones, I told her
how much I love her
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July 1975

Smithsonian

Volume 6, Number 4

Table of Contents

COVER: The ketch *Palawan* glides past a mountainous iceberg looming off the coast of Greenland (p. 38)
Photograph by Thomas J. Watson jr.

7 The view from the castle: Secretary Ripley reports that Bicentennial plans are under way at full steam

8 Phenomena, comment and notes: Cheerful cirrhosis treatment, the copper connection in arthritis and a dim view of our 200th birthday celebration

14 Letters to the Editor

24 Around the Mall and beyond

30 The proclamation of the Declaration of Independence was not exactly heard around the world—at first
By Richard B. Morris

38 Arctic sailing is new challenge for yachtsman who braves the pack ice off Greenland and pushes on northward to Ultima Thule and even beyond
By Thomas J. Watson jr.

48 The Rice Hotel, quintessence of Lone Star State hospitality and high jinks, ends six decades of glory
Text by David Snell, color photographs by Robert Westerlage

60 Restoring prairies is tougher than just a planting job, but efforts are afoot to save what's left and add more
Text by Dennis Farney
Photographs by Patricia D. Duncan and Steven C. Wilson

68 The still-mysterious rock paintings of Tassili Plateau reveal a rich culture in what has become Saharan wasteland
Text by Pierre Colombel, photographs by Loomis Dean

78 Shinto, ancient religion of Japan, venerates nature and ancestors in a constant cycle of renewal
Text and color photographs by George and Claire Louden

86 A kaleidoscope for children
Photographs by Dick Swanson

88 From George Inness to Franz Kline, and up to the present, Delaware Water Gap has attracted artists for 150 years
By Michael Olmert

96 New particles jolt established theories of ultimate matter in laboratory results a continent apart
Text by James S. Trefil, illustrations by Jan Adkins

104 Book reviews

112 Additional reading

113 Smithsonian tours

114 July events at the Smithsonian

116 How to miss being blitzed by *Blitzen*
By Patrick Ryan

Ford announces the new Pinto MPG and Mustang II MPG

34 mpg highway

$ Pinto: $2,769

Official test results certified by the U.S. Government Environmental Protection Agency, which rates all cars using a common dynamometer testing procedure. Competitive fuel economy results based on EPA Buyer's Guide. Mileage may vary depending on your driving habits. **City mileage 23 mpg.**

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See MPG equipment on next page.

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You can buy the new Pinto MPG now—at no increase in price—and get the same kind of standard equipment that makes the regular Pinto so popular: rack and pinion steering, 4-speed manual with floor-mounted stick, overhead cam 2.3-liter 4-cylinder engine with solid state ignition, front disc brakes, and more. Best of all, Pinto MPG comes with the same type of Lifeguard Design Safety Features found in our full-size Fords including side door beams, protective bumpers, and many others. (If there's one thing more important than better mileage, it's peace of mind when you're driving.)

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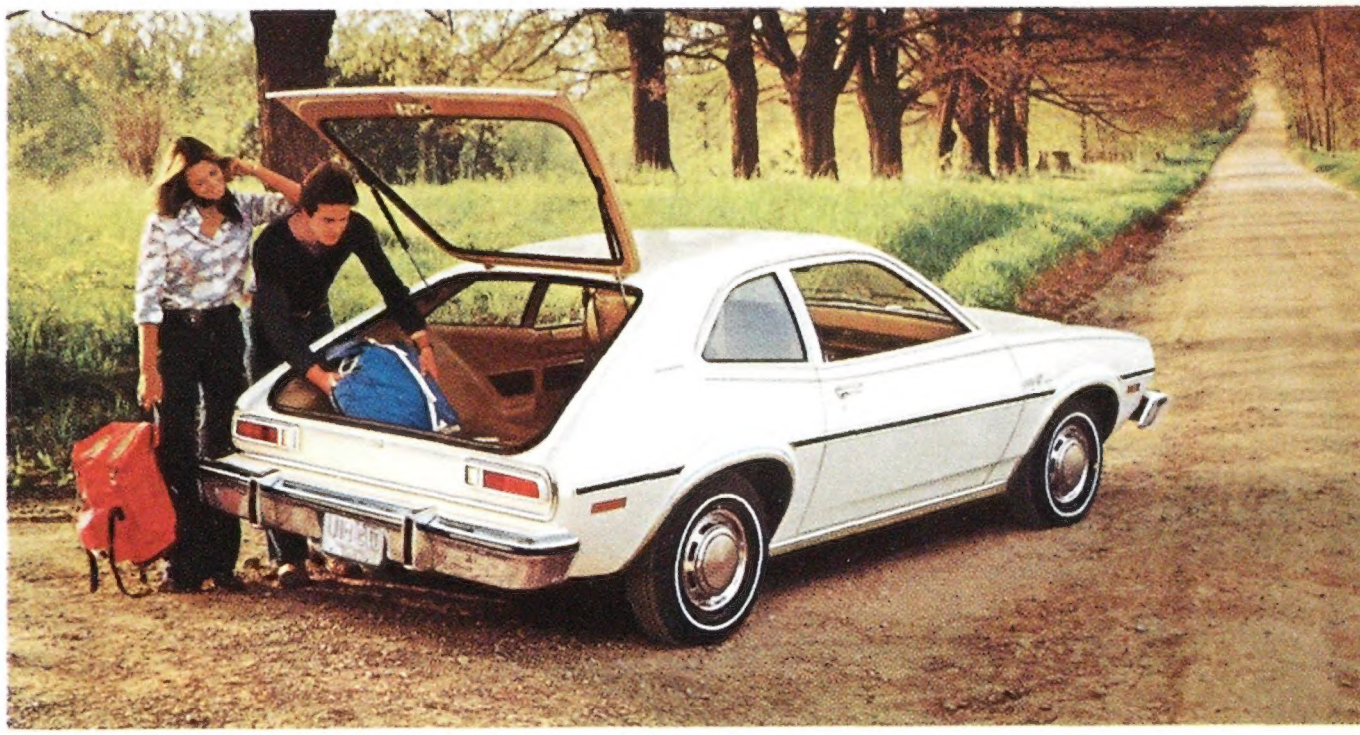
Pinto MPG 3-Door Runabout (above and below), with optional Exterior Decor Group, deluxe bumper group and WSW tires.

MPG The new Pinto MPG is available in three models, including the popular 3-Door Runabout. That handy rear door flips up and the rear seat flips down to give you a five-foot-long carpeted load floor. The Runabout also includes such standard Pinto features as all-vinyl front bucket seats, and a mini-console. You can have the flexibility of the Runabout—and EPA highway test economy of 34 miles a gallon (city 23 mpg)—if you see your Ford Dealer now and order a new Pinto MPG.



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MPG This symbol is your tip-off to a wagon with something you don't usually buy a wagon for: good mileage. The Pinto MPG Wagon comes with all the standard Pinto equipment—and is EPA rated at 34 miles to a gallon on the highway, 23 in the city. And you can get it at no increase in price. Pinto Wagon already outsells every other wagon in this country—big or small. If you want good mileage in a wagon, see your Ford Dealer fast.

MPG equipment:
Pinto MPG comes with a 2.3-liter 2V 4-cylinder engine, 4-speed manual (or optional automatic transmission, see box on facing page), a 3.18 axle ratio and catalytic converter. This is the equipment that produced these high results in the EPA tests.

Pinto MPG Wagon production started June 9.

Official U.S. Government Environmental Protection Agency tests:

34mpg (4-speed manual) highway...23mpg city.

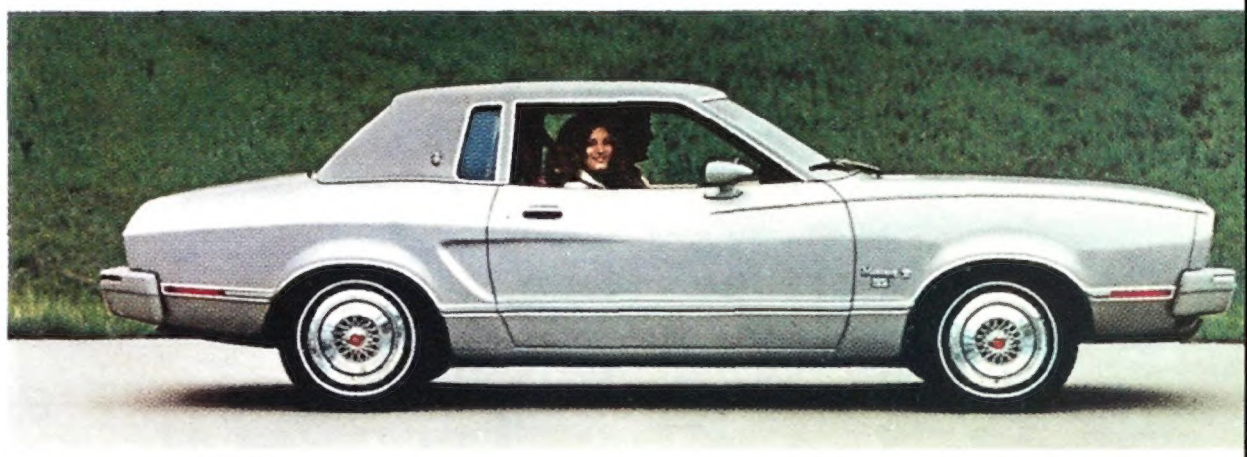
30mpg (automatic) highway...21mpg city.

New Mustang II MPG

Left, Mustang II MPG Hardtop • Right, Mustang II MPG 2+2

Better mileage than any small luxury car. Lower priced than any foreign competitor.

MPG This insignia tells you America's best-selling small luxury car now gives you the luxury of increased mileage. Official EPA highway tests got 34 miles to a gallon (23 mpg city) with a 4-speed manual transmission. Even with automatic transmission, the new Mustang II MPG got better mileage than many imports. Along with good mileage you get the standard Mustang II equipment: tachometer, rack and pinion steering, steel-belted radials, floor-mounted 4-speed stick—and the same low Mustang II price. Order now for quick delivery.



Mustang II MPG Ghia. Opera windows, vinyl roof and bodyside moldings are just some of the elegant touches that are standard on Ghia and make it such a distinctive small luxury car.

Mustang II MPG $3,529*

$2,748 less than Datsun 280Z
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And $319 less than Monza Towne Coupe with its 5-speed option, which is required to achieve its best mileage results.

MPG equipment:
Mustang II MPG equipped with 2.3-liter 2V 4-cylinder engine, 4-speed manual (or optional automatic) transmission, a 3.18 axle ratio and catalytic converter.

*Base sticker price of Mustang II MPG Hardtop excluding title, taxes, destination and dealer prep. Price comparisons based on sticker prices. Because destination charges are extra on all cars, and dealer prep is extra on all cars except GM and Toyota cars, the price difference may vary in some areas.

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The view from the castle

The Bicentennial celebration, our national 'rite of passage,' is getting under way full steam at the Institution and elsewhere

Author James A. Michener has recently written of the importance to humans of ceremonial rites of passage, and suggests that a similar need exists in the history of nations. What are rites of passage? Solemn and memorable ceremonies of all peoples and all religions concerned with birth, puberty, marriage, ordination, death and the celebration of birthdays. Michener mentions that he has been concerned since 1966 with the celebration of the 200th anniversary of the United States. The fact is that our national program has bogged down because of the ennui induced by bombastic political promises and also by the spiritual deflation that has followed our national failures abroad and our disillusionment at home.

The Smithsonian Institution started talking about the Bicentennial in 1965, and began laying out a program with Congressional support in the ensuing years. We were aware that a good decade of lead time would be required for planning. Reading about the Centennial celebrations of 1876, I was mindful of the part that this Institution had played as what would now be called a "lead agency," beginning in 1874, and how important that contribution of ours was to the success of the nation's Centennial.

Now the Bicentennial is upon us, and I find myself more optimistic. In Washington, the Department of Transportation seems to have energetic plans for visitors to the city. Hopefully, the National Visitor Center will be completed on time. And as there should be important nearby adjuncts to relieve the pressures on the Mall, plans call for off-Mall parking and transportation for tourists.

The new Park Service Director, Gary Everhardt, is confident, as I am, that somehow we will successfully meet the demands of next summer's heady festival activities. Meanwhile, our exhibitions and buildings will be a source of wonder and excitement to the many who come here. Any Associate planning to come to Washington next year should write for advice to the Visitor Information and Associates Reception Center, Smithsonian Institution, Washington, D.C. 20560.

One of the parts I like best about our vision of the Bicentennial is what Michener also writes of so appreciatively: the local community celebrations. Although the Smithsonian holds large collections of objects for the nation, there are far too few to meet the demand (now more than 200 inquiries a month) for exhibitions or materials from around the country.

To fulfill its commitment to the Bicentennial, the Institution has developed two series of information and exhibit systems which will make resources and research available for use in local celebrations. The Institution has just published the first two of its 20 exhibit kits, or portfolios: "Indians: the First Americans" and "Colonial Years." And by next year we shall have more than 200 traveling exhibitions on the road.

Helping the smaller communities is part of our national objective—our mandate. And so, although the Bicentennial has recently been something of a cliffhanger, nearly discredited in advance in the press, I feel we are going to come out of it like Harold Lloyd in one of his old movies. In the end we will win out, will have performed a great rite of passage.

S. Dillon Ripley

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Phenomena, comment and notes

Cheerful cirrhosis treatment, the copper connection in arthritis and a dim view of our birthday

Recently, a number of Indian leaders met in, of all places, a Congregational Church in Westport, Connecticut, where they explained to some 400 people assembled by the World Affairs Center how they view the Bicentennial celebrations.

"Our white brothers," said a young Aztec named Juan Rena, "met in a room in Philadelphia 199 years ago to talk of freedom. They had to define the word, having never experienced such a thing before. They were all escaping monarchies. But the Indians had been living here in freedom for thousands of years until our white brothers arrived."

Oren Lyons, a professor of American Studies at the University of Buffalo and an Onandaga elder, said that the "white settlers were right in realizing the Indians can't be tamed. They are fiercely independent and teach their children to think for themselves and stand on their own two feet, knowing that real security is found in independence, not in a Dreyfus Fund."

The sourest view came from a Wampanoag-Narragansett named Tall Oak who claimed that the two Wampanoag villages of Mashpee and Gay Head had contributed more men proportionately to the Revolution than any other towns in Massachusetts—and of these, only one returned alive. On the other hand, he pointed out, the Declaration of Independence mentions native Americans only once—as "merciless Indian Savages."

Unquestionably, the star attraction was Dennis Banks, leader of the American Indian Movement and a prime mover in the Wounded Knee occupation. Standing outside in the afternoon sun under the white church steeple, he retraced the long path of broken treaties (the Golden Hills reservation in Connecticut has the distinction of being the most whittled away: It is 2.6 acres) and he listed a number of human rights that sounded re-

At Bicentennial meeting, Indians beat out the AIM song. Among singers were Tall Oak, left; next to him, Dennis Banks; and far right, Onandaga Oren Lyons.

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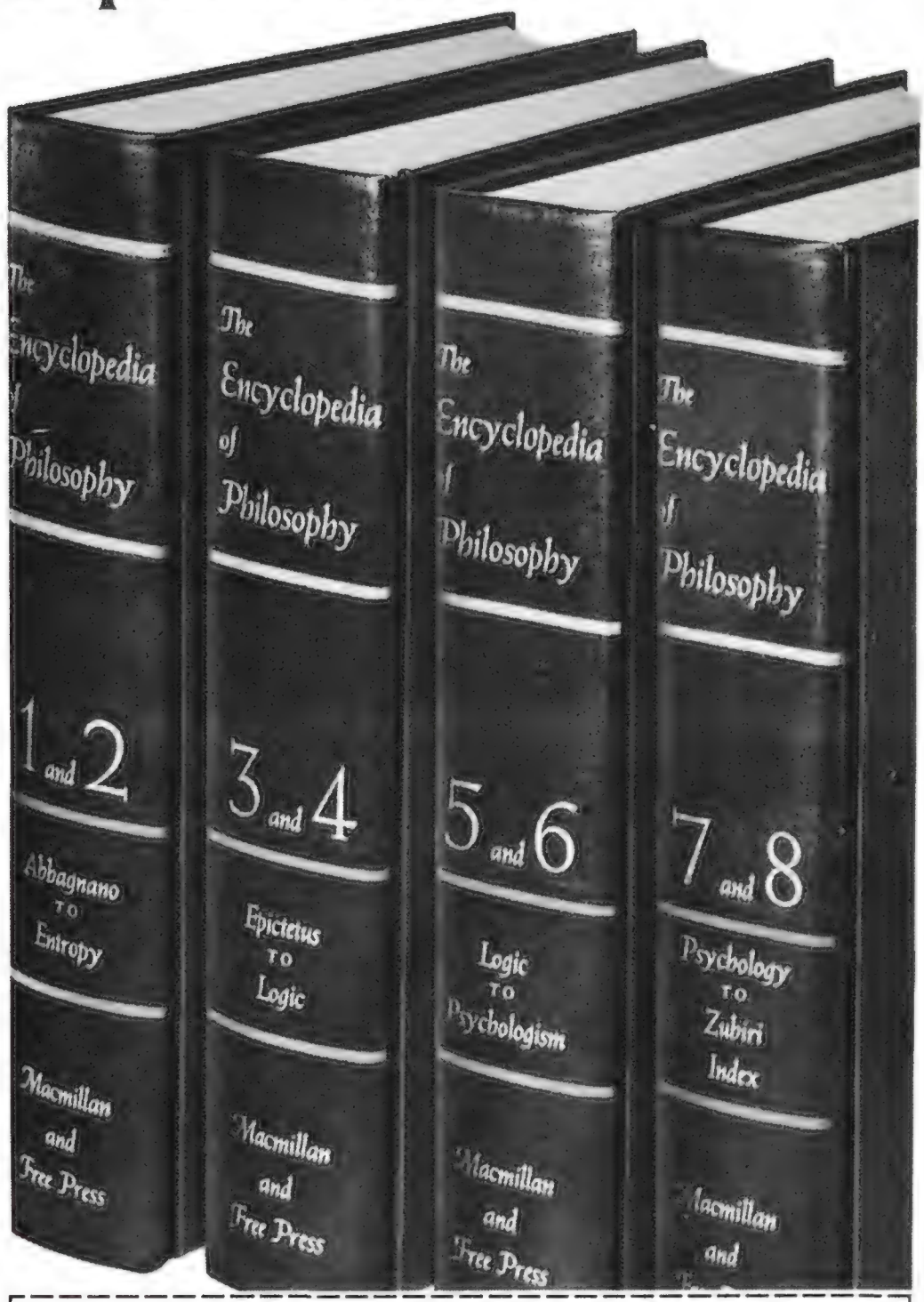

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markably like the Bill of Rights. Until native Americans achieve those, Banks said, "there will be no celebration in the Indian community."

Staying tight

Among the more unfortunate wages of sin is cirrhosis of the liver—a fairly major problem in the United States where people abuse their systems with a great deal of alcohol. Besides the obvious solution, another has emerged from research done in Canada. According to *New Scientist* (Volume 66, Number 945), the answer is to stay drunk longer.

The chain of events involved in this affliction are, in simplified form, as follows. Alcohol circulates in the blood supply to the liver, causing the cells to take up more thyroid hormones from the blood. The hormones speed up the cells' metabolism (breaking down the alcohol) which means the cells also need more oxygen. Those liver cells farthest from the blood supply don't get enough, become inflamed, die and turn into scar tissue.

Now scientists at the Addiction Research Foundation in Ontario believe they have found the way to intercede in this process before the cells die and become scar tissue. Working with alcoholic rats and monkeys, they administered an antithyroid drug. This prevented the cell metabolism from speeding up, and liver inflammation declined dramatically. They are now running similar experiments on humans with liver damage.

A side effect of this treatment, of course, is that the alcohol remains in the blood longer and is finally excreted largely unchanged via the kidneys—which means in effect that the drinker remains drunk longer. There was no indication that this treatment aids hangovers, but you can't have everything.

A pinch of copper

Remember those copper bracelets that some people, including Vince Lombardi, wore in a slightly magical desire to ward off arthritis? It seems that they chose the right metal, if not the most effective method of application. According to *Chemical and Engineering News* (Volume 53, Number 16), medical researchers at the University of Cincinnati have been mixing anti-inflammatory drugs with copper, forming a particular kind of chemi-

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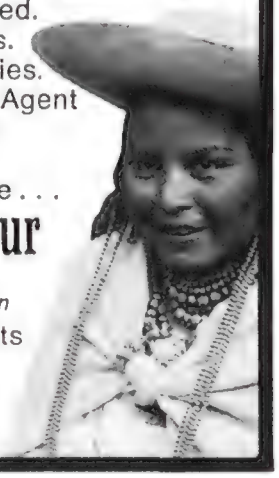

cal combination called a chelate, and testing them on various experimental animals. Invariably the anti-inflammatory power of the drug is increased. "In the case of aspirin, the copper aspirinate is 20 times more active than aspirin in animal tests simulating arthritis."

Even non-anti-inflammatory drugs are likely to become anti-inflammatory if combined into a copper chelate. What's more, the chelates have an anti-ulcer effect as well, and a problem with most clinically used arthritis drugs is that they cause some degree of gastric distress. The next step—testing on human arthritis—is under way.

A can of worms

Pandora probably didn't let the world's troubles out of a box after all—more likely it was a can. At least that is a conclusion from the response to an item in this column in May in which a particular type of manual can opener was branded as an ultimate tool which required no improvements (see p. 16).

From the torrent of can-opener commentary, several key notions emerged:

- Portable tools are not always the best kind of tools. Humans being human, portable tools often fail to return to their proper place.
- The model pictured in May has, according to the manufacturer, been discontinued (which is somehow typical). Instead they are concentrating on larger, more complex versions, including manual and electric ones and an air-operated model that sells for $25,000.
- Any manual can opener is a nightmare for people with arthritis or who are otherwise handicapped. The failure to point this out was an insensitive oversight.
- People apparently take their can openers very seriously.

More technology assessed

Several other examples have surfaced of what William Ducker of Lubbock, Texas, has aptly dubbed "transoptimal technology." Mr. Ducker's own example is the modern watch.

The closed-face pocket watch, he says, required "four distinct operations to tell the time: (1) remove the watch from the pocket, (2) depress the stem to open the cover, (3) close the cover, and (4) return the watch to the pocket."

Open-faced pocket watches eliminated two of these steps and the open-faced wristwatch was yet another improvement, requiring "a minimal movement of only one hand to bring the watch face into the line of vision.

"We now have the digital, push-button, solid or liquid crystal, transistorized wristwatch which requires the use of *both* hands to determine the time."

Ruth Baldwin of Oneonta, New York, makes a case for the humble rubber plug for stopping up drains in sinks—as opposed to the "levers that raise and lower metal caps over the drains." The latter, she admits, cannot get lost but when something goes wrong with them, most people are forced to call a plumber, whose rate for an hour's work would buy you a drawer full of spare rubber plugs.

Edward J. Saller's choice for an ultimate technological achievement is the automobile, circa 1939. By that year, he says, hydraulic brakes were universal, the shift lever had been moved to the steering column, and the automatic transmission had been introduced. Various improvements since, he says, such as dual brake systems and running lights, are not technological breakthroughs. "Many 1939 automobiles still running today," he adds, "will pass 1975 air pollution standards *without* efficiency lowering control devices."

JAMES K. PAGE JR.

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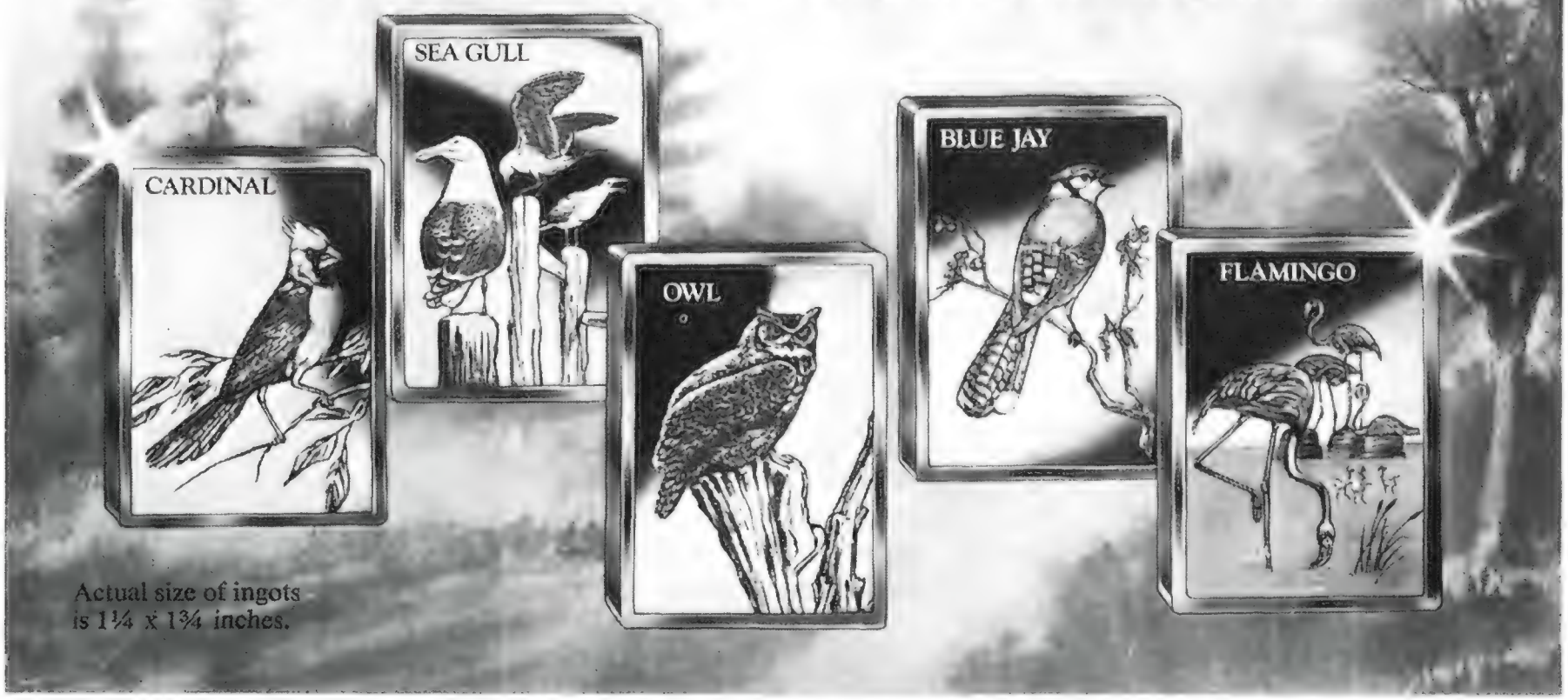

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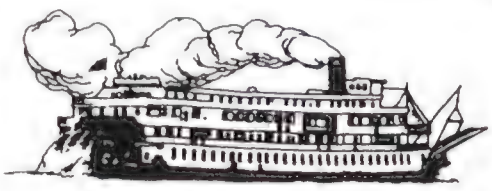

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Letters to the Editor

St. Francis Xavier

Dear Sir: Madhur Jaffrey's article, "The last chance, probably, to view a saint's remains," is a mere cold résumé of factual events of the exposition of the body of a saint who has made Goa and the Basilica of Bom Jesus world famous. Author Jaffrey saw only the literal "dry bones," while those who pilgrimaged to Goa, including my mother, saw the remains of a holy man that they venerated.
Dr. Marie J. Stuart
Syracuse, New York

The flush toilet

Dear Sir: In reading your article, "An idea in need of rethinking: the flush toilet," I was dismayed at the omission of the name and contribution of Sir John Harington. Unlike the probably apocryphal Thomas Crapper, Sir John was a flesh-and-blood inventive 16th-century Englishman whose contribution to our flush toilet is a historic fact.

His invention is disclosed in a treatise, *The Metamorphosis of Ajax*. It is not unlikely that the word "jakes," meaning a privy, is derived from a corruption of his title, and little imagination is required to relate our modern venerated word "john" to this estimable gentleman.
Dr. Louis P. Hamburger jr.
Baltimore, Maryland
Since we were not writing a history of origins of the flush toilet, but concentrating on the alternatives being offered today, we did not mention Harington's notable contribution in 1596. For his bawdy description, he was banished from the court of Elizabeth I. Ed.

Dear Sir: In regard to Sam Love's comment that he believes Thomas Crapper is a myth, your readers might be interested in a picture [below], which was published in *Road & Track* magazine in January 1974.
Bob Swain
Appleton, Wisconsin

Dear Sir: In addition to the conveniences of the Toto Ltd. model you mentioned, with the sink above the toilet for washing hands while the tank is refilling, there is another factor. The Japanese toilet is always in a little room, separate from the washing and bathing facilities. The only other item in that little room is a vase of flowers to enhance one's contemplation.
Turrell Uleman
Pittsburgh, Pennsylvania

John Rogers

Dear Sir: It would have been of historical value if David Bourdon had given credit to the few who pioneered in reviving interest in John Rogers and his storytelling sculpture. For example, Mr. and Mrs. Chetwood Smith wrote the first book about Rogers' Groups in 1934. I began collecting Rogers' groups in 1939 and published my collector's checklist and manual on Rogers' Groups in 1960, with line drawings originally used by Rogers to advertise his work.
Vrest Orton
Weston, Vermont

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Dear Sir: The Rogers studio was saved from demolition by the New Canaan Historical Society, which had the building moved onto its property and restored it in 1960. In 1965 the studio was designated a National Historic Landmark by the Department of the Interior.
Dr. Jerome Selinger
New Canaan, Connecticut

Puppets

Dear Sir: John Bernard Myers' article on the ancient and noble art of puppetry was most interesting, but I wish that he had mentioned one of our most dynamic groups of puppets or "muppets."

Oscar, Big Bird, Ernie, Burt, Grover, and Jim Henson's other "Sesame Street" muppets have enlivened and expanded puppetry to a degree that should ease Mr. Myers' fears that "puppetry may be edging toward an endangered species list of its own."
Frederick W. Bartels
Syracuse, New York

Can openers

Dear Sir: The can opener pictured in "Phenomena, comment and notes" is far from the "ultimate achievement." Have you ever tried opening a large coffee can with it? We have one of these diabolical contraptions in our office coffee mess, and I can assure you the job is next to impossible. This is because it is not self-locking, and a very powerful grip indeed is needed to keep the cutter engaged and cutting through can top. [See "Phenomena," p. 8.]

Instead, I suggest a smaller and even more primitive hand can opener with no long hand grips. This can opener has a patent date of 1927. I found one among the kitchen things left by my late mother. It is entirely of metal, easy to clean and, above all, it is self-locking. It is my only can opener and it is indispensable.
Richard Y. Norrish
Edwardsville, Illinois

Dear Sir: There is a serious flaw in the design of the "ultimate human achievement." Based on hundreds of physical examinations, about 20 percent of adult American women lack sufficient strength to operate it.
Dr. Ralph M. Wade
The Albany Clinic
Albany, Oregon

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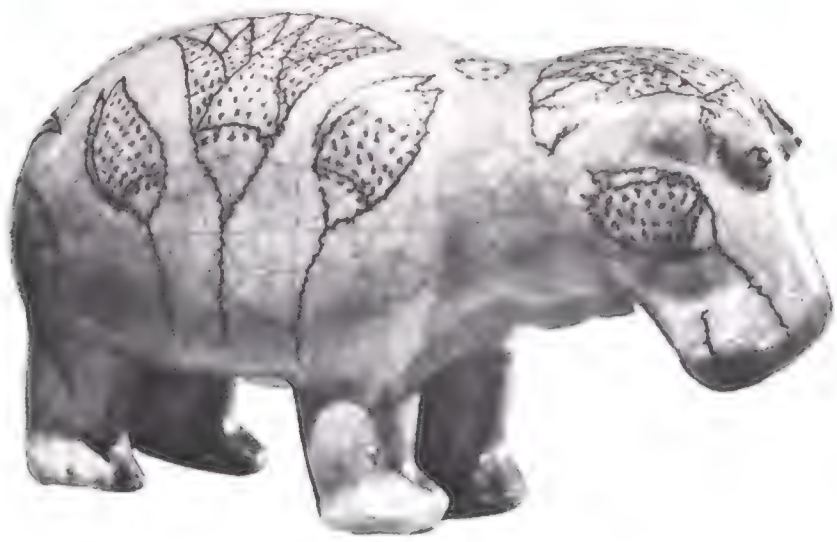

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Dear Sir: A much simpler design, which uses far less material and opens any size or type of can as fast and easily as the one pictured, is the common G.I. can opener issued with military rations.

It measures approximately one inch by one-half inch and folds as thin as a half-dollar, and can be carried in the pocket or worn around the neck. Most camping equipment stores sell them, or one could join the military and get one free with field rations.

I would send mine to Mr. Page, but it is indispensable for my backpacking trips.
James A. Cone
Suisun, California

Trinidad's scarlet ibis

Dear Sir: Author Timothy Green, in talking with me about the scarlet ibis article, misunderstood my statement about the British Fleet Air arm. The scarlet ibis were not used for "target practice" but their habitat, the Caroni Swamp, was. He could have added that when the United States came into the war, its planes passed very low over the area also, chasing the ibis away.
Richard S. W. Deane
The Pointe-à-Pierre Wild Fowl Trust
Trinidad, West Indies

Teddy Tucker

Dear Sir: Your article, "Treasure-diving Teddy Tucker still builds a legend," was most disappointing. It has taken professional underwater archaeologists years to begin to make amateur divers realize that these "treasures" are not theirs for the taking. By giving approval to Tucker, you've made the work of professionals more difficult. To an archaeologist, a small nail or ceramic fragment could be more valuable and yield more information than an emerald necklace.
Leslie L. Beuschel
Institute of Archaeology and
Anthropology
University of South Carolina
Columbia, South Carolina
In the case of Teddy Tucker, Mendel Peterson, Smithsonian's former director of underwater exploration and curator of historical archaeology, was called upon to investigate the site for its historical significance. Afterward, the Smithsonian helped to organize expeditions to Bermuda, and all artifacts found were sent

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to the Institution for reference and exhibition purposes. Ed.

'Our elephant'

Dear Sir: In answer to the question you raised in your editorial comment on Jessie L. Thompson's letter, my answer is that one *can* "mount" an educational display without the animals in question being dead—for example a visit to our fine National Zoo in Washington might be more inspiring.

M. L. Claunch
Brownsville, Texas

Dear Sir: In reply to the letter from Bill Davidson of the National Rifle Association: We live in a house surrounded by woods, our property bounded on one side by a hunt club and within a mile of state land where organized hunting is permitted. We have bullet holes in our windows. Our children are not allowed to play outside during hunting season. When they visit friends, they are taken by car. Ours is red.

The toll from six families along a mile-long stretch of road has been 12 cats, five dogs and a pony during the last five hunting seasons. Two hunters have been shot. I have not, during that time, seen any deer taken out on hunters' cars (40 lined the road last opening day).

We are well aware that hunters are becoming more urbanized; it is hard to believe anybody with country training would be so stupid and so dangerous in the woods.

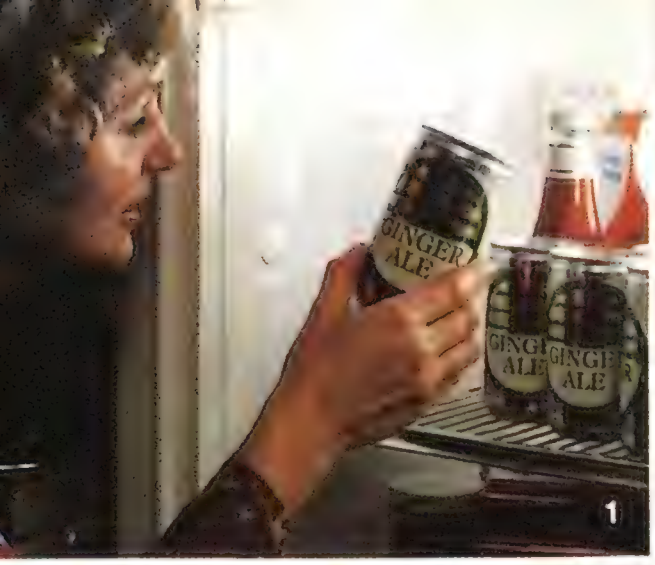
Sandra Oddo
Hurley, New York

The view from the castle

Dear Sir: I had the opportunity of seeing the beautiful Semăl tree Secretary Ripley discussed in the June issue. I think the Indians use an accent over the "a" in Semăl and they describe the lapwing's call as "did he do it."

John Witherspoon
New York City

Mr. Ripley did not have an opportunity to read proof of the June "View from the castle." This will explain why Semăl lacks the accent. In addition, as any field naturalist knows, the Red-wattled lapwing's call has been transliterated as "did he do it" from time immemorial. Our apologies to the author. Ed.



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The aluminum can is lightweight, chills quickly and keeps beverages fresh and flavorful. It's also easy to recycle. Used aluminum cans are baled or shredded and shipped out from the reclamation center, then remelted and fabricated into brand-new cans. Recycling is important because it saves energy and gives aluminum new life, over and over. That's why Alcoa supports recycling programs throughout the country.

Aluminum cans are being remelted with only five percent of the energy it took to make molten metal from the ore in the first place. Recycling saves natural resources, too. You can see that recycling cans is beneficial to all of us. In the future, the high value of aluminum scrap could help make it economically attractive to recycle municipal solid waste.

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Over 30 million dollars have been paid to collectors through the combined recycling efforts of the aluminum and beverage industries. Since 1970, almost six billion cans have been recovered. There is no doubt that the collection and recycling of aluminum cans is working. More than two billion were collected last year, and the number is growing.

For more information on aluminum can recycling and how one community established a reclamation program, please write for our free brochures. Aluminum Company of America, 985-G Alcoa Building, Pittsburgh, PA 15219.

The reasons for using aluminum are found in aluminum itself.

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OFFICIAL BICENTENNIAL COMMEMORATIVE PLATE

of The Bicentennial Council of the Thirteen Original States

"Caesar Rodney Decides the Vote on Independence"

LIMITED EDITION / GOLD ON STERLING SILVER / 8" DIAMETER

The Bicentennial Council of the Thirteen Original States announces its Official 1975 Bicentennial Commemorative Plate

Orders must be postmarked by July 20, 1975.
Limit: One plate per person.

THE BICENTENNIAL COUNCIL OF THE THIRTEEN ORIGINAL STATES, representing the official Bicentennial Commissions of all thirteen of our original states, is dedicated to making the nation's forthcoming Bicentennial a time for revitalizing the spirit of the American Revolution. A time for remembrance, commemoration, and meaningful rededication.

With purpose and with pride, the Council is officially commemorating the momentous events that culminated in the Declaration of Independence by issuing a series of annual Bicentennial commemorative plates in strictly limited edition. Previous plates honored Thomas Jefferson and John Adams.

Now, the Bicentennial Council is preparing to issue its official 1975 Bicentennial Commemorative Plate, honoring the great American patriot Caesar Rodney. Though suffering from the effects of illness, Rodney rode 80 miles on horseback to resolve a deadlock in the Delaware delegation and enable the Second Continental Congress to vote for independence. In a very real sense, it was his vote more than any other that resulted in the birth of our nation.

A unique combination of gold and silver

The Caesar Rodney Plate will be minted in solid sterling silver. The sculptured scene will portray Rodney arriving at the State House in Philadelphia (now Independence Hall) to cast his crucial vote for independence. This scene will be in 24kt gold electroplated on sterling. And the legend around the rim of the plate will be etched and inlaid with 24kt gold.

To produce this important commemorative plate for each subscriber, the Bicentennial Council has appointed The Franklin Mint, America's largest private mint and foremost producer of fine works of art in precious metal. Each plate will bear a registered serial number, plus the prized hallmark of The Franklin Mint.

The total edition of the Caesar Rodney Plate will be determined by the exact number of orders postmarked by the deadline date of July 20, 1975. There is a strict limit of one plate per person. And the edition will be forever limited to the exact number of orders entered by the closing date, with the addition of one plate to be reserved for the White House, one for Independence Hall and one for the Bicentennial Commission of each of the thirteen original states.

Plate records the drama of 1776

As the month of July 1776 approached, it became clear that the hotly-debated resolution before the Second Continental Congress, declaring American independence, was about to come to a vote. The Congress recognized the vital necessity of unanimous action. And every delegation was resolved for independence, with the exception of Delaware. Delaware's two delegates were deadlocked—one for and one against the resolution.

Urgently, a rider was dispatched to recall to Congress the third member of the Delaware delegation — Caesar Rodney. Even though he was ill, Rodney did not hesitate. He set off on July 1, 1776, in the early dusk. He rode all night through torrential rain and all the next day, to reach Philadelphia in time. In the late afternoon of July 2, Caesar Rodney arrived. The momentous voting began. When the roll call reached Delaware, Rodney rose, weary and mud-spattered. He said, simply, "The voice of my people at home is for independence . . . I vote for independence."

The great decision for independence was made. And the United States of America was born.

An historic series

Following the issuance of the Caesar Rodney Plate, one additional plate will be issued by the Bicentennial Council. In 1976, at the height of the Bicentennial era, this final plate will honor John Hancock, the first to sign the Declaration of Independence.

Those who acquire the Caesar Rodney Plate will have the opportunity to obtain this 1976 Bicentennial Plate bearing the same serial number as their Rodney plate. However, there is no obligation to purchase the 1976 plate. Subscribers will be notified of its issuance in advance and given the opportunity to obtain it if they wish.

The Caesar Rodney Plate will be issued in September 1975, and sent to subscribers in a deluxe library case. The price of the sterling silver plate is $225, and a convenient monthly payment plan is available.

Edition closes July 20, 1975

Because of its historic significance, its beauty and intrinsic value, this commemorative plate is destined to become one of the most important collector's plates of the Bicentennial era—a treasure to be enjoyed now and passed along to future generations. To obtain this plate, *be sure to mail the order form below by July 20th.*

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Around the Mall and beyond

Feeling unusually open-minded about plants, I drove to the Smithsonian Radiation Biology Laboratory, outside Washington, on a recent morning to learn what's going on with studies of light and its effects on growing things. It turns out that Dr. Walter Shropshire jr., the assistant director, is discovering some rather exciting facts about a single-celled aerial fungus called *Phycomyces blakesleeanus.* I had never thought that a fungus could be considered titillating, but this hairlike stem with a little sphere on top is doing some flaky things.

Phycomyces is a good laboratory subject because you can see it and even pick it up with your fingers if you're careful. And it grows fast—about 3 millimeters per hour—and reacts within minutes to various stimulants.

Dr. Shropshire, a pleasant man who has obviously taught students at some time, judging from his effectiveness with me, has long been interested in the way a beam of light can bend a plant, a reaction called phototropism.

In the first place, Phyco is blind to all colors except blue and ultraviolet. But shine a blue beam on the light-sensitive part of the stem (about half a millimeter below the sphere), and Phyco increases its growth rate and bends toward the light.

Now, in order to bend, the surface of the stem must grow faster on the far side and slower on the near side. So how does this work? Shropshire has found that the almost transparent stem, filled with a saline solution, serves as a refracting lens, focusing the beam on the far surface of the stem—the surface away from the light source. To check this, he set up an artificial lens which would focus the beam on the *near* side. Presto! The plant bent the other way, *away* from the light.

Shropshire also finds that his little one-celled wonder adapts to changes in light much the way the human eye does. Increase the intensity suddenly, and after a

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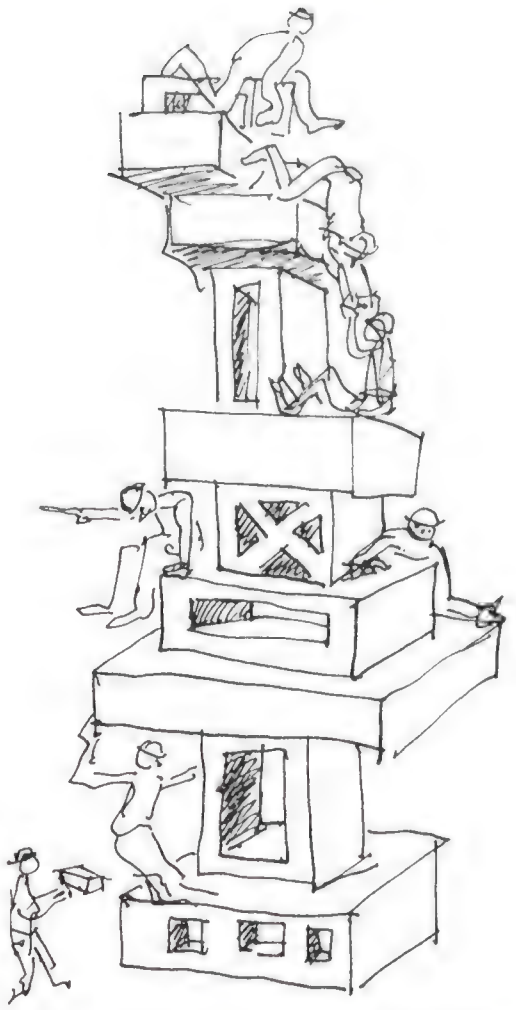
couple of minutes the plant increases its reaction, going too far, then over-correcting and at last straightening out.

Moreover, in setting up that artificial lens beside Phyco, Dr. Shropshire has found another strange reaction: With no light at all—or a red light, which is the same as none to the plant—Phyco bends away from the intruding lens. Now, this begins to get a little like "Twilight Zone" stuff, but Dr. Shropshire, who doesn't even look like a scientist, much less a mad one, has got it worked out. Around that sensitive "eye" on the plant's stem there are molecules that drift off. After all, this is the most "active" area of the plant. When one of these wandering molecules meets another object in close proximity to the plant, it bounces back to the eye and produces the avoidance reaction.

The effect of this radar warning on the eye of Phyco is to increase the growth on the near side of the stem so that it bends away from the intruder. But how does the far side of the stem know enough to slow its growth so the stem can bend evenly?

"Aha," says Shropshire. "That's what we're working on—finding a sort of communication system between one side of this little beast and the other."



"Building blocks" form crystals like floors of high-rise apartment under construction.

All of this takes place in a one-celled fungus maybe 2.5 centimeters long. How does it affect us? Scientists don't fully understand how our eyes work. If we can figure out how a single cell sees, maybe we can find new clues about how we see with a complex eye and a many-celled brain. And what's more, it might be nice to know that if you recoil at the sight of a bit of mold on your food, there is a chance that it is recoiling from *you*.

Flushed with this crash course in radiation biology, I left the RBL (as we scientists call it) and ventured next into one of the mazelike lab areas of the National Museum of Natural History to talk to Dr. Dan Appleman about the formation of crystals. Crystals are not plants. They're good, solid minerals that behave predictably, building up in regular ways with no surprises. You can count on a crystal.

At least that is what I had thought until I talked to Appleman. He's finding out that a person can't even be so damn sure about crystals these days.

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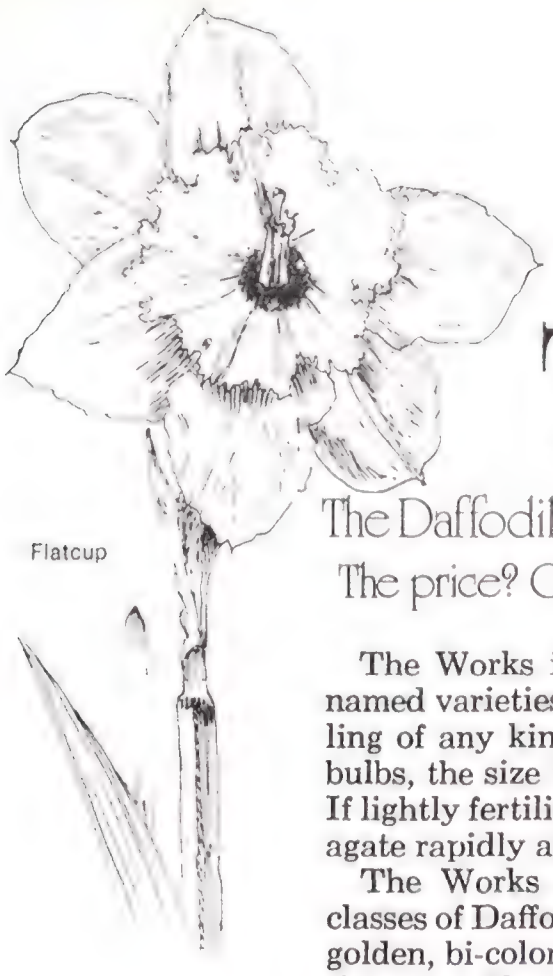
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The Works is also unique because it contains all classes of Daffodils, except miniatures. There are yellow, golden, bi-color, and pink Trumpets; many kinds of the charming Flatcups, members of the Poetaz group, some of which are doubles; Cyclamineus Hybrids having somewhat shorter stems and smaller flowers; and Triandrus Hybrids with clusters of blooms on each stalk.

Cut the flowers and bring them inside — they'll last from 3 to 5 days. Because The Works has a long season of bloom, you'll have flowers in the house all spring, inexpensive ones you can say.

Poetaz

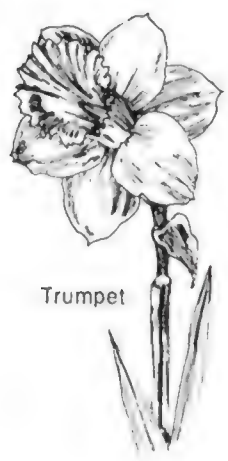
You wouldn't expect a mixture of named-variety Daffodils, double-nosed, to sell for less than $26.25 a hundred, and it doesn't. But $26.25 is *less* than the price of other good mixtures. And, as noted, about equal to the cost of dinner for two, one cocktail each, no wine. The Works is sold only by the hundred (this is also the thousand rate, so you can easily order any desired quantity). Shipping charges (about 10 to 15 percent) are extra and will appear on your order acknowledgement, but if the bulbs travel far, an additional charge will be made after shipment. (Please add sales tax if shipped to a Connecticut address.)

Triandrus

You may order from this advertisement. If charged, please request a credit application form. An order for The Works will bring you an annual subscription to White Flower Farm publications — the Spring and Fall Editions of *The Garden Book*, our catalogue, which is *really* a garden book, and three editions of NOTES, a valuable reminder publication issued Spring, Fall, and Winter. And you will receive these useful gardening publications throughout 1976 — without charge. However, if you want to shop for fine named-variety Daffodils or other spring-flowering bulbs or perennials or unusual shrubs, but not this mixture, send $4.00 for a subscription to the White Flower Farm Publications, which includes a credit for $4.00 on a first $15 order.

But if this mixture interests you, please order it at once, for it sells out every year and cannot be reordered from Holland. Last year we returned orders for more than 35,000 bulbs, not a pleasant happening.

—A. Pettingill


Trumpet

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Appleman has been probing around with silicon dioxide, a compound with four-atom building blocks that make up quartz and other similar crystals. These units—building blocks is still the most useful description for them—are sort of pyramid-shaped, or tetrahedral as we scientists call it, with one atom at each of the four apexes.

Now, Xrays reveal that these blocks join, apex to apex, to form various crystals. The mineral melanophlogite is formed by rings of five blocks, latching on to each other to construct its crystals. They're not particularly symmetrical because five-sided rings are hard to arrange in a regular way. (Try laying five-sided tile on a bathroom floor sometime!) But the mineral tridymite is built up by rings of six blocks, and these six-sided rings form layers which stack quite regularly, like the floors of a high-rise apartment under construction.

The trouble is that the "floors" of this crystal are *not* all alike. They vary slightly in size, in a most uncrystal-like way. But—and here we get flaky again—every 20th layer is exactly the same. In other words, the 20th floor of the apartment building is a duplicate of the ground floor; the 21st floor duplicates the first; and so on throughout the crystal. As Dr. Appleman says, "It's as though the building blocks had memories."

Oh, there are explanations for this oddly animal behavior by totally inanimate particles. But I'm not sure I want to know them. My father's friend, Slocum, used to say back in New Hampshire: "Ef you can caount on the weather, the romance goes out of gettin' in the hay."

Down in the courtyard of the Museum of Natural History, far from the mysterious crystals, two new bug rooms are in operation, taking the place of the old bug house that used to be out behind the Castle. Last month the old bug house closed down after a quarter-century's work.

Work, that is, for the dermestid beetle, a creature common around the world which serves as a friend to scientists by cleaning bones for them.

You take your ordinary old bones, the skull of a field mouse, say, and you'll find that it's impossible to study. No matter how clean you think it is, there are bits of cartilage clinging to it and scraps of ancient meat and it doesn't reveal everything it should—and what's more it's

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Tyroleans are also available in slack length, shipped unhemmed. Both are made of cool, lightweight Tundra cloth, 50% cotton, 50% dacron. Easy-care . . . just wash and wear 'em. Color: Tan. Men's even waist sizes: 28-44. Women's even sizes: 8-20. Slacks: **$16.50 ppd.** Shorts: **$14.00 ppd.**

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pretty eccchy to work with. But you toss this skull into the bug house, and those beetles take over. Their larvae move in and polish off every scrap that isn't bone and leave a nice shiny clean specimen for you to examine.

The trouble with the old bug house—where this nasty little task was accomplished—was that it was hard to keep at the proper level of humidity because of the drying effect of steam heat. Also, it seemed impossible to keep spiders out, and spiders zap the beetles even faster

Spiders stalk bone-cleaning beetles.

than the beetles zap the bones. Also, it st— well, it was *offensive.* "Damn charnel house," recalls Henry Setzer, Curator in the Division of Mammals, of the Research Department of Vertebrate Zoology.

No matter how often the old bug house was fumigated, some spiders managed to stick it out and pounce, slavering, on every beetle that blundered into their webs. Since spiders would sometimes lurk inside rib cages, the specimens themselves were fumigated before and after being "bugged." Bones also got an ammonia bath which loosened up any tissue that the larvae, for reasons of their own, turned down. Baby larvae, about 1.5 millimeters from end to end, do the cleaning of fine bone structures. They can get right in between the teeth. Big larvae, maybe two centimeters overall, handle the big jobs.

Setzer now has a couple of brand-new toys in the east court of the Museum of Natural History. They are clean, shiny, spider-proof bug rooms with controlled temperature and humidity and they don't st—, they aren't offensive. "The bugs ought to be really happy there," says Setzer fondling a tiny field mouse skull as clean, you might say, as a hound's tooth.

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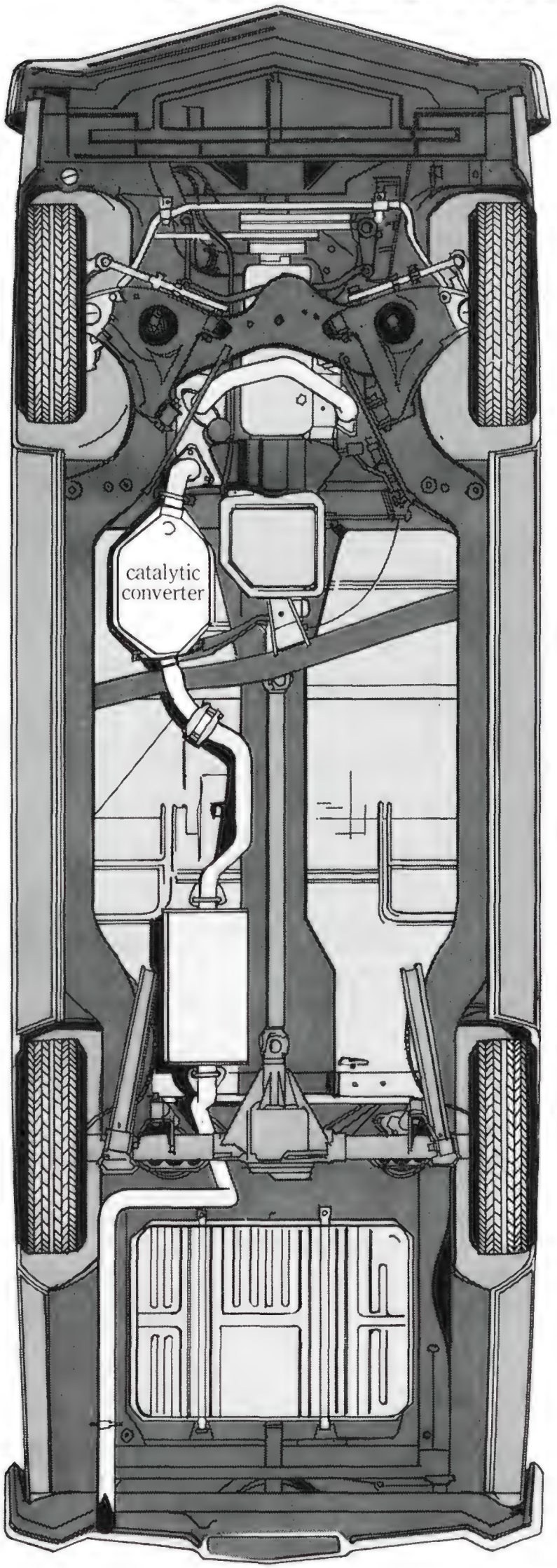
Because of the catalytic converter, GM cars use less gasoline.



Catalytic converter, standard equipment on 1975 model GM cars.

Primarily because of the catalytic converter, gas mileage on GM cars has been increased by 28% on a sales-weighted average, according to EPA figures.

The converter gives GM car owners the best of both worlds: emissions of carbon monoxide and hydrocarbons are cut by about 50% from the already lowered levels of 1974, and it is possible once more to tune engines for economy, drivability and performance.

Catalytic converters do add to the basic cost of a GM car. Part of that money goes for insulation that keeps the outer skin temperature of the converter in normal operation about the same as that of an ordinary muffler, and far lower than the temperature of the exhaust manifold.

But when you think of the cost, think of the reduction in fuel consumption over the life of that average GM car; and don't forget, the use of unleaded gas lowers maintenance costs by greatly increasing the life of spark plugs, engine oil and exhaust system components.

After more than a billion miles on the road, the GM catalytic converter has become a world standard in pollution control devices. GM has signed contracts to build converters for auto-makers in Europe and Asia, as well as other U.S. manufacturers.

You get the fuel-saving advantages of a catalytic converter as standard equipment on 1975 cars from General Motors, a world leader in automotive pollution control technology.

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By Richard B. Morris

The Declaration was proclaimed but few in Europe listened at first

Words of independence rang faintly abroad to begin with—sometimes censored, often edited. But finally their message got through

George III never received the Declaration, but he knew he had a rebellion on his hands and, in his words, "the dye is cast."

Writing to John Adams some 45 years after the event, Jefferson observed that "the flames kindled on the 4th of July, 1776, have spread over too much of the globe to be extinguished by the feeble engines of despotism; on the contrary, they will consume those engines and all who work them."

Jefferson's remarks, inspired by counterrevolutionary forces in Europe, revealed a balanced judgment that, outside his own country, the doctrines expounded in the Declaration of Independence he had authored had not yet prevailed. Still, he refused to be discouraged. "I shall not die without a hope that light and liberty are on steady advance," he remarked.

Two centuries after Jefferson's assertion of revolutionary principles was adopted by the Continental Congress, there are enormous spaces on the globe wherein the Declaration is accepted more as rhetoric than as reality. Only Denmark, for reasons of its own, chooses to celebrate the Glorious Fourth (see pp. 36-37). But if our Declaration failed to ignite an instant worldwide conflagration, it was not for want of trying. The American public was informed without delay. On the night of July 4, John Dunlap, the Philadelphia printer, issued the Declaration as a broadside, signed by John Hancock as President of Congress and attested to by Charles Thomson, as secretary.

Although not until July 19 did Congress order it engrossed on parchment and signed "by every member" (several months passed before all 56 signers complied), Congress publicly proclaimed the Declaration at Philadelphia's Old State House on July 8. Almost at once handwritten copies were sent by Jefferson to a few friends in Virginia. The printed broadside was distributed through every state. Within the week the document began to appear in numerous Colonial newspapers. Washington had it read to his troops encamped in and around New York, and saw to it that his subordinates had it duly proclaimed to the men under their commands. And one state legislature after another endorsed the Declaration.

Congress was equally concerned about mobilizing world opinion. On July 8 the Secret Committee of Congress, which conducted foreign affairs, dispatched

a copy of the Declaration to Silas Deane, our agent in France, following up with a letter dated August 7 in which he was instructed to make the document known to France "and the other powers of Europe."

Although formal connection with the British court had been severed, it was assumed that copies of the broadside would reach English friends of America through ship captains sailing for England. As early as August 5, the inhabitants of St. Kitts, West Indies, were reported to be toasting "WASHINGTON, LEE and INDEPENDENCY to America." On August 14, Governor William Tryon of New York, in enforced exile on the ship *Dutchess of Gordon* off Staten Island, dispatched a copy of the Declaration to Lord George Germain, the Colonial Minister, writing that every vestige of royalty had been demolished by the rebels in New York. About the same date, the royal governor of Nova Scotia received the Declaration, but permitted the printer merely to publish the closing paragraphs in which Congress formally declares independence.

The Declaration appeared in the *London Chronicle* and the *Daily Advertiser* of London on August 17. *The Gentleman's Magazine* (England's popular news monthly) published it in its August issue, with a tactful comment by a writer cloaking his identity under the pseudonym "Sylvanus Urban." "Whether those grievances were real or imaginary, we will not presume to decide," he remarked, adding, "The ball is now struck, and time only can shew where it will rest."

The August issue of *Scots Magazine* dissected the reasoning and the grounds of indictment set forth in the Declaration, and found that they reflected "no honor" upon either the "erudition" or the "honesty" of its authors. Ridiculing the doctrine of equality as contrary to everyday experience and dismissing the claims to life, liberty and the pursuit of happiness as "talking nonsense," the magazine implied that there was something hypocritical about effusions for liberty emanating from a people who maintained the troublesome institution of slavery.

It was impossible to elicit a direct comment from George III, that "Royal Brute of Briton," for whom the Declaration of Independence reserved its most eloquent and ringing indictment, charging him with being "a tyrant" and "unfit to be the ruler of a free people." The King maintained a scrupulous silence until October 31. On that day he opened the House of Lords with a speech—drawn up, of course, by his prime minister, Lord North. Feeling no special affection for his "ungrateful children," as he continually called them, he must have relished some of the comments

In this detail from Trumbull's famous "The Declaration of Independence" John Hancock is seated at right. It took months for all 56 members to sign.

that were put in his mouth. Denouncing their leaders as "daring and desperate," he conceded that they had "now openly renounced all Allegiance to the Crown, and all political Connection with this Country," presuming to set up "their rebellious Confederacies for Independent States."

An address approving the sentiments of the King's remarks revealed that the peers were sharply divided, supporters of the Ministry denouncing the "insolence of the rebels" and Whig opposition factions forming a united front in condemning the address. Both the Marquis of Rockingham and the Duke of Grafton expressed support for the stand of the former Colonists. The Duke of Richmond conceded that it would be much better to have the Americans "as friends than enemies," and expressed the view that England would find it necessary to acknowledge them "as so many independent States." Yet the Ministry remained in complete control of the House of Lords.

Though similarly successful in the Commons, the Ministry did not manage to avoid even more turbulent scenes. Charles James Fox observed that the "Americans had done no more than the English had done against James II," while the irrepressible John Wilkes, only recently Lord Mayor of London, hailed the "spirit and courage" of which the Declaration of Independence provided proof, and predicted that "poster-

A leading American historian, Richard B. Morris is Gouverneur Morris Professor of History at Columbia where he is editing John Jay's papers.

Silas Deane, American agent in France, never got his copy until after all Paris had read it.

ity" would do it justice. "I hope, and believe, you never will conquer the free spirit of the descendants of Englishmen, exerted in an honest cause. They honor and value the blessings of liberty."

The debates in Parliament had revealed how sharply divided England was over the Declaration of Independence. Not so long-suffering Ireland which was ever cordial to the cause of America. The Declaration of Independence was speedily noted in that country, appearing in August in both the *Hibernian Journal* and the *Freeman's Journal.* In pointing to the American example, the Irish patriot Henry Grattan voiced the views of Protestants and Catholics alike. "When America manifests to the world her independence and power," he asked rhetorically, "do you imagine you will persuade Ireland to be satisfied with an English Parliament making laws for her?" To keep from having to fight a civil war on a second front, the British Parliament made substantial trade concessions to Ireland and at war's end granted the Irish Parliament a coordinate status under the Crown. As Grattan put it, "the American war was the Irish harvest."

It was not until November 17 that Silas Deane, America's agent in Paris, received from Congress the copy of the Declaration of Independence dispatched under date of July 8, but apparently held for the covering letter of August 7. Both arrived simultaneously after a fast 35-days' passage from Salem. Of course, everyone in Paris was already talking about it.

The French ministry acted promptly. The Comte de Vergennes, Louis XVI's foreign minister, and one already disposed to providing America with secret aids pending the right opportunity to join the war against England, brought the matter before the King and Council on August 31. As Vergennes saw it, the Declaration greatly diminished the prospects of reconciliation between erstwhile colonies and mother country. He pointed out the advantages France might derive from the altered state of affairs.

When copies of the Declaration came to Deane, he promptly turned one copy over to Vergennes, informing him that France was the first foreign power to be notified and renewing his request for recognition. The wily Frenchman was not easily moved to alter his cautious posture toward a quasi-ally. There was nothing to be gained by an open avowal of independence on France's part, he rejoined. French ports were open to American ships and commerce "and greater indulgencies allowed than to any other nation." Should France have to go to war with England at some point, it would be far better that the conflict originate from some other ground. This would place America under a less immediate obligation to France. In addition, he reminded Deane, France was required to consult her allies on a question of going to war.

Unlike the Spanish government, which maintained an icy silence on the subject of American independence and did not permit the publication in Spain or her colonies of the Declaration, the French government, for reasons of its own, sponsored a propaganda journal known as the *Affaires de l'Angleterre et de l'Amérique.* Starting publication in 1776, that journal printed such subversive documents as the Declaration, along with the state constitutions, which French

French Foreign Minister de Vergennes approved Declaration, but not as a ground for intervention.

Charles James Fox, "friend to America," called Americans no worse rebels than the English in 1688.

ideologues invaribly hailed as path-breaking events.

Despite censorship in many countries, it was impossible to keep news of the Declaration of Independence from spreading, even though the text was at times denied publication. The Venetian ambassador to England sent a copy to the Foreign Office, enclosed in a communiqué. The enclosure disappeared and the public never saw the full text in print. Instead, the Venetian periodical *Storia dell'Anno* translated some passages of the document, but added a caution that the preamble contained "some false and baseless maxims, which are abhorred by wise governments and which would subvert all nations, should they not immediately and universally be recognized as erroneous and fatal to public tranquility."

Contrariwise, Philip Mazzei, a Florentine aficionado of all things American, received from his friend Jefferson a draft of the Declaration, had copies made and sent the texts of both the Declaration and the Pennsylvania constitution to Grand Duke Leopold of Tuscany. That reform-minded ruler saw to it that the Declaration was published in complete translation.

Although Goethe, Schiller and other literati sounded ecstatic about the Spirit of '76, the heads of the German states, from Frederick the Great of Prussia to Maria Theresa of Austria, showed no enthusiasm for the arguments advanced by the American subversives.

Nor was Catherine II of Russia, who could be quoted as both favoring and opposing American independence, depending upon her hearer, less scrupulous in avoiding any act which could be construed as recognizing the United States. Nonetheless, the Comte de Vergennes made a point of sending a copy of the Declaration to Russia's foreign minister in 1780. Although strict censorship prevailed in Russia, a Moscow publisher, Nikolai I. Novikov, provided much news coverage of the American Revolution in his newspaper.

Novikov managed to pursue his pro-American line without interference from the authorities. A.N. Radishchev, in his stirring *Journey from St. Petersburg to Moscow*, hailed American Revolution, state constitutions and leadership, and was exiled to Siberia.

If the Declaration of Independence helped popularize notions of the right of revolution as a last resort, of popular sovereignty, of liberty and equality, it was the French Revolutionary era which made it seem mandatory to issue a declaration of high principles to justify the overthrow of established authority.

When, in August 1789, the French National Assembly adopted the Declaration of the Rights of Man and the Citizen, they were in form paying tribute to Jefferson's Great Declaration while drawing substance from the Virginia Declaration of Rights. Nearby, in the Austrian Low Countries, the Belgian people started their

John Wilkes, much cartooned English radical, hailed Declaration's "spirit and courage."

own revolution in 1789, with each province separately declaring its independence. Flanders appropriated words from the American Declaration.

When Greece was swept by revolt against the Turks in 1821, the Greek assembly at Messina addressed an appeal to the American people, pointing out that it was the Americans who had first proclaimed "those rights to which all are by nature equally entitled." After formulating their own Declaration of Independence and provisional constitution, the Greeks adopted the Constitution of Troezen with its assertion that government rests on the consent of the people and of the principles of equality before the law, freedom of speech, along with safeguards against arbitrary taxation and imprisonment without due process.

By the time of the Greek revolution, Latin America was in the throes of a struggle to achieve independence. Young Richard Cleveland of Massachusetts and William Shaler of Connecticut, undertaking an extensive voyage along the coast of Latin America, anchored at Valparaiso, where they learned from some Chileans who took them into their confidence that they "resented their state of vassalage" and dared express the hope that "emancipation was not far distant." The New Englanders carried among their wares a Spanish translation of the Declaration.

Every state in Latin America issued its own declaration of independence upon revolting against Spain or Portugal. Perhaps the closest parallel in language to Jefferson's Declaration is that of Argentina, while, curiously, in Brazil, the declaration was proclaimed by a single man, the Prince Dom Pedro, who, professing to voice the will of the majority, made his declaration verbally.

In a more recent era—lest we forget—Thomas G. Masaryk, heading a Czech government-in-exile, issued, only a month before the Armistice ending World War I, the Czechoslovak Declaration of Independence, so alike in phraseology and spirit to the document drawn up 142 years earlier in Philadelphia. While Masaryk signed the "Declaration of Common Aims of the Independent Mid-European Nations," a bell, a replica of the Liberty Bell of '76, rang out, and the Declaration was then read to a crowd.

From the Declaration of Independence issued by a group of 33 Korean patriots on March 1, 1919, down to neutralist Burma, whose declaration was proclaimed on January 4, 1948, Asian nations regardless of ideological commitment have paid obeisance to the Great Declaration. Even the "MacArthur Constitution" of 1947, drawn up for Japan on the initiative of the occupation forces, has a preamble affirming the right to life, liberty and the pursuit of happiness.

Ho Chi Minh quoted Declaration

"All men are created equal." These were Jefferson's words in 1776. They were also Ho Chi Minh's in 1945, appearing in the opening sentences of the Declaration of Independence of the Democratic Republic of Vietnam. Ho's use of them was overt and intentional. American members of the OSS mission who made parachute drops to Ho in the summer of 1945 recall his efforts to obtain either a copy of the Declaration or an approximation of its essential passages.

Were Jefferson alive today, he might well share in the widespread pessimism that "the feeble engines of despotism" will soon be consumed by the flames kindled on the fourth of July 1776. On the other hand, it might be a source of gratification to him that his Great Declaration is no longer the exclusive literary property of America, but belongs to the world. It is a continuing commitment which rests heavily on the conscience of all mankind.

Ao. 1776. No. 71.

De
Forsendelse
allene
Kiøbenhavnske

til
med Posten
privilegerede
Tidender.

Mandagen, den 2den September.

Af disse Tidender udgives ugentlig 2de Stykker, ved Brødrene Johan Christian og Georg Christopher Berling.

London, den 16de Aug.

Efter en Afskrivt, som man har her om General Congressens Erklæring af 4de Julii, hvorved den erklærer de forenede Colonier for en frie og uafhængig Stat, indeholdes derudi fornemmeligt følgende: Naar det i det menneskelige Tilstandelsers Løb, er for et Folk nødvendigt, at sønderrive de Stats-Baand, hvorved det er forenet med et andet Folk, og iblandt Jordens Magter at antage, den afsondrede og lige Rang, hvortil Naturens Lov og Gud selv har forlenet ret Ret, saa fordrer en anstændig Ærbødighed, for den menneskelige Tænkemaade, offentlig at legge Verden for Øyne, de Grunde, som bevæge samme Folk til denne Afsonkring. Vi holde t og for sig selv disse Sandheder nokſom bekiende, at alle Mennesker ere eens skabte, at de af Skaberen ere blevne begavede med visse ubetalige Rettigheder, iblant hvilke henhøre Liv, Frihed og Ret til at befordre sin egen Lykke; at der, for at være forsikkret om disse Rettigheder, ere blevne oprettede Regieringer iblandt Menneskerne, som have deres retmæssige Magt af deres Biefald, som blive regierede; og at Folket, naar en Regieringsform strider mod denne Hensigt, har Ret til at forandre eller tilintetgiøre den; og derimod at oprette en nye Regiering, grunde den saaledes, og indrette dens væsentlige Styrke saaledes, som det paa bedste Maade kan synes at befordre sin Roe og Velfærdt. Forsigtighed lærer vel, at længe befæstede Regieringer ikke bør forandres formedelst smaae og hastige Aarsager; og Erfarenhed har ogsaa lært, at Menneskeligheden er meere tilbøyelig til at taale, saalænge det kan taales, end forskaffe sig selv Ret med at forandre Regieringsformen, som den er vant til. Men, naar mangfoldige Uhæld og uretmæssige Anmasselser, uophørlig modstride benævnte Hensigt, og Øyemærket beviser, at det sigter til at bringe Folket under en fuldkommen Despotismum, da er det samme Folks Ret, ja Pligt at afkaste sig en Regiering, og forsyne sig med nye Beskiermere for sin tilkommende Sikkerhed. Saaledes har disse Coloniers Taalmodighed været, og saaledes forholder det sig med Nødvendigheden, som tvinger dem til at forandre Regieringsformen. Historien af de nu værende i Storbrittanien, er en Historie af igientagne Fornærmelser og uretmæssige Aspresselser, som have inted andet Øyemeed. havt, end at i disse Lande at befæste. Til Beviis herpaa, blive disse Begivenheder forelagte en upartisk Verden. Efter en vidtløftig Fortælling af igientagne Besværelser, som de forgiæves have bragt for Kongen, for Parlementet, for Nationen, ende de Erklæringer med disse Ord: Desaarsag Vi, Repræsentanterne af de forenede Stater i America forsamlede i en General-Congres, formedelst vores Tænkemaades Oprigtighed beraabe os paa den allerhøyeste Verdens Dommere, og af Kraft og i det forsamlede gode Folks Navn i disse Colonier, gisre hermed høytidelig bekiendt og erklære: At disse forenede Colonier ere og bør med Ret være frie og uafhængige Stater; at de afsige sig fra al Lydighed imod den Brittiske Krone, og at alle Statsbaand og Forbindelser imellem dem og Staten af Storbrittanien, ere og skal være gandske tilintetgiorte, at de derfor som frie og uafhængige Stater, have den fuldkomneste Ret og Magt, at føre Krig, og gisre Fred, slutte Forbindelser og indgaae Allianzer, befæste Reglementer i Hensigt til Handelen, og overhovedet, at foretage alt, hvad uafhængige Stater paa en Lovformig Maade kan gisre. I fast Tillid til det Guddommelige Forsyns Beskiermelse, forbinde vi os med hverandre, at befæste denne Erklæring med vort Liv, med vort Gods og med vor Ære.

Underskrevet, paa Befaling og i Congressens Navn den 4de Julii 1776.

John Hancock, Præsident. Hr. Thomson, Secretarius.

Man har paalidelige Efterretning om at Congressen har oprettet en Militairisk Orden, som skal opmuntre Provincial-Officererne til Tapperhed. Samme skal kaldes Independentz Ordenen. Den bestaaer af Congressens Præsident John Hancock og 24 andre Riddere, hvoriblant Generalerne Washington, Putnam og Wooster ere. Ordenstegnet er en femkantet Sølv-Stierne paa Brystet og et Lysegrønt Baand over den høyre Skulder, med en Figur af America,

Copenhagen's *Berlingske Tidende* was perhaps the first European paper to print, on September 2, 1776 a full text.

"Skal" is the watchword at Rebild National Park as family ties reach out across the Atlantic.

Denmark's Queen Margrethe and Prince Henrik disembark from royal yacht for the great day.

Danes choose July 4 as reunion day with American cousins

Since 1909, many Danes have been celebrating the Fourth of July even more strenuously than most Americans. The date was selected as a proper reunion time for Danish-Americans and their friends and relatives in the Old Country. The site for the festivities (since 1912) is Rebild National Park, a wild and hilly section of the island of Jutland, set aside for the annual use of thousands of celebrants.

The great day consists of speeches, band music, picnicking, endless toasts and, above all, emotional meetings between the hospitable Danes and the visiting Americans of Danish background. Loudspeakers call on various people to rendezvous behind the bandstand, and they say the tears flow as fast as the beer.

Initiates into a local marching and drinking society march through a street in the town of Aalborg.

Friendly flags fly in the natural amphitheater at Rebild as some 20,000 people line the hillsides.

Sailing in Arctic is a new challenge for a yachtsman

By Thomas J. Watson jr.

A graceful ketch with eggshell-thin aluminum hull braves the pack ice off Greenland northward to Ultima Thule *and even beyond*

The guard on the dock at Thule Air Base looked down on the blue 68-foot cruising ketch moored below. It was a cold, gray morning in northern Greenland with a temperature hovering just below 40 degrees. A light mist was blowing in from the northeast. A large tanker was unloading petroleum supplies beside the ketch.

"Where have you come from?" the guard called down. A few members of the crew were sitting in the cockpit, enjoying the desolate scene. One answered, "We have come from north of here." The guard sounded amazed. "North of here? I didn't know there was *anything* north of here!"

Our crew glanced at each other with some pride. About 80 miles north of the Thule base is an Eskimo village, perhaps the most northerly in the world, called Qanaq. We had come from there.

If one looks at a map showing the relationship of the United States to Greenland, you will see that in cruising to Greenland you pass St. John's, Newfoundland, sail a few hundred miles in the North Atlantic into Davis Strait, Baffin Bay and finally Melville Bay. Farther north is Smith Sound, where Greenland and Ellesmere Island come very close together, and then a wider opening, Kane Basin.

More than 500 years before Columbus, Eric the Red was thrown out of Norway for murder, sailed to Iceland, got into trouble for yet another murder, and in 982 gathered a few friends and set off for a western land of high mountains. He had heard about this place because an earlier Icelander, blown off course, sighted its distant peaks.

Eric explored the fjords on the southwest coast of Greenland, not far from Cape Farewell. When he returned to Iceland, he told great stories of the land that lay to the west. He was salesman enough to call it Greenland, although this world's largest island was 90 percent covered by ice and snow, summer and winter, just as it is today. The ice cap averages 5,000 feet thick, and if it were all to melt at once, it would raise the level of the oceans of the world some 21 feet. On the west coast and a small portion of the east coast, a certain amount of the shoreline thaws out in summer. South of the Arctic Circle, particularly in the area of Julianehaab, there are lovely fields, wildflowers and even a few small trees.

Eric was successful in bringing a substantial number of families to his homestead at Brattahlid, near Julianehaab, and Vikings remained on the coast for about 400 years. Several hundred farms were established in the area of Brattahlid and in Ameralik Fjord, adjacent to Godthaab, the modern capital of Greenland. It is estimated that there were about 3,000 Vikings on the coast at the height of their civilization.

A considerable traffic opened between Greenland and Europe: polar bear skins, walrus tusks and white falcons in exchange for the foodstuffs, seeds, wood and

Palawan, named for a South Pacific island, pauses by a wave-hollowed berg. Author rowed through hole, skimming ice floor, shown by the green water, and just evading later icefalls.

Ice covers nearly all of Greenland, much of the neighboring islands. Brown indicates seasonal vegetation. *Palawan* visited the red-dotted places—and others—but was "beset" in ice off Etah.

iron needed to keep the communities going. However, after looking the area over, I picture the Greenland Viking settlements as marginal, to say the least; a combination of undernourishment, intermarriage and unfriendly Eskimos wiped out the Vikings in the 15th century. When the island was rediscovered, there was no real evidence of intermarriage with the Eskimos. Eskimo legends indicate merely that they knew about the Vikings and had fought many battles with them.

It was Eric's son, Leif Ericsson, who sailed from Brattahlid westward to the coast of Baffin Land, then down the Labrador coast and at least as far as L'Anse aux Meadows, Newfoundland—a site discovered by the Norwegian archaeologist Helge Ingstad in 1960. Their fabulous story is contained in two sagas, proud possessions of certain Icelandic families. But these stories were not written until 200 years after the exploits they describe, so there is speculation about where else the Vikings went in North America.

John Cabot discovered Newfoundland in 1497 (SMITHSONIAN, April 1971) and proceeded southward, hoping to find a passage to the west. In the summer of 1577 Martin Frobisher, on his second visit to Frobisher Bay on Baffin Island, discovered what he thought was gold, and great mining activity took place on Kodlunarn Island. Shipments went to England, and stock was sold. But it was all for nothing. In 1585, John Davis pushed even farther northward, discovering the Davis Strait and parts of Greenland, and in the early 17th century, Henry Hudson penetrated Hudson Strait and Hudson Bay.

One of my favorite navigators, Jens Munk, sailed from Copenhagen with a group of Danes and ended up in the southwest corner of Hudson Bay in the year 1619. Munk was iced in there and spent the winter, during which all but a handful of his crew died of scurvy and malnutrition. In the spring, he and a few survivors tumbled ashore, so weak they could barely crawl, and ate small shoots of grass and other greens that were beginning to grow. They nursed themselves back to strength, curing their scurvy, then built a small pinnace from the remains of their vessel and sailed back to Copenhagen.

Then came Melville, Kane, Peary, Rasmussen and many others. The area has been extensively explored since World War II and numerous weather stations have been established in northern Canada, Ellesmere Island and Greenland.

With this historic background in mind, I had always considered the possibility of sailing my own boat to that general area and seeing the natural conditions that these earlier explorers experienced. That was the reason the guard on the Thule dock found us heading south into the base last August.

Since boyhood I had read accounts of explorations in this area, and remembered particularly the voyages of the schooner *Roosevelt,* sailed by Captain Bob

Palawan lies serenely at anchor in Ameralik Fjord, not far from Godthaab (see map, opposite).

Bartlett. This vessel took Admiral Peary to Etah, just south of Kane Basin, from where Peary made his several attempts at the Pole.

During our trip to Godthaab in July 1974 there was a lot of ice around Labrador and northern Newfoundland, so we sailed eastward more than 100 miles to avoid it, then north until we approached the coast of Greenland. As skipper I worried about fog and icebergs, but the cruise to Godthaab was surprisingly pleasant, though in the cold, overcast weather we navigated mainly by loran rather than the sun.

Godthaab gave us a chance to meet government officials, acquire a top Eskimo pilot and visit the Ameralik Fjord, where some of Eric's people had settled. Those Vikings knew how to pick a town site. The Viking settlement, Sandnes, is about 100 miles from the sea in a protected fjord with a good deal of level ground around it. When we looked at the Viking foundations, we could see the magnificent outlook they had across the fjord to the westward. The area is surrounded by snowcapped peaks and in winter I am sure the fjord is at least partly frozen. When these people picked the area to settle, it was undoubtedly summer. We found it as warm and pleasant as a summer day in Maine. The only problem was swarms of mosquitoes, apparently at their height at the time of our visit.

We coasted northwards from Godthaab, stopping at the local towns and spending a day or two in Godhavn on Disko Island, once a rendezvous for whalers.

Very close by is the town of Jakobshavn, famous for its glacier, the most active glacier in the northern hemisphere. It moves 75 feet each 24 hours and is responsible for 80 percent of all of the icebergs in the North Atlantic, according to local authorities; literally millions of tons of ice are dumped into Disko Bay each day. From the hills overlooking Jakobshavn Glacier's northern bank, you see the great bergs breaking, and you hear the growl of the glacier moving.

From Jakobshavn we cruised about 700 almost windless miles to Qanaq and Thule, using our motor most of the way. Navigational hazards were few and the loran gave us good positions, but we constantly wove between large icebergs. If we had got into trouble, help would have been a long way off. We had been told in advance that we should not go there in the first place. But we had 24 hours of daylight each day with generally clear weather. When we reached the red cliffs near Thule and could see the radar antennas in the distance, everything was going so well that we decided

Retired president and chairman of the board of IBM, the author is a member of the Smithsonian Board of Regents. He has sailed for years, flies his own jet and hot air balloon. He is an avid photographer.

to press right on and push as far north as possible.

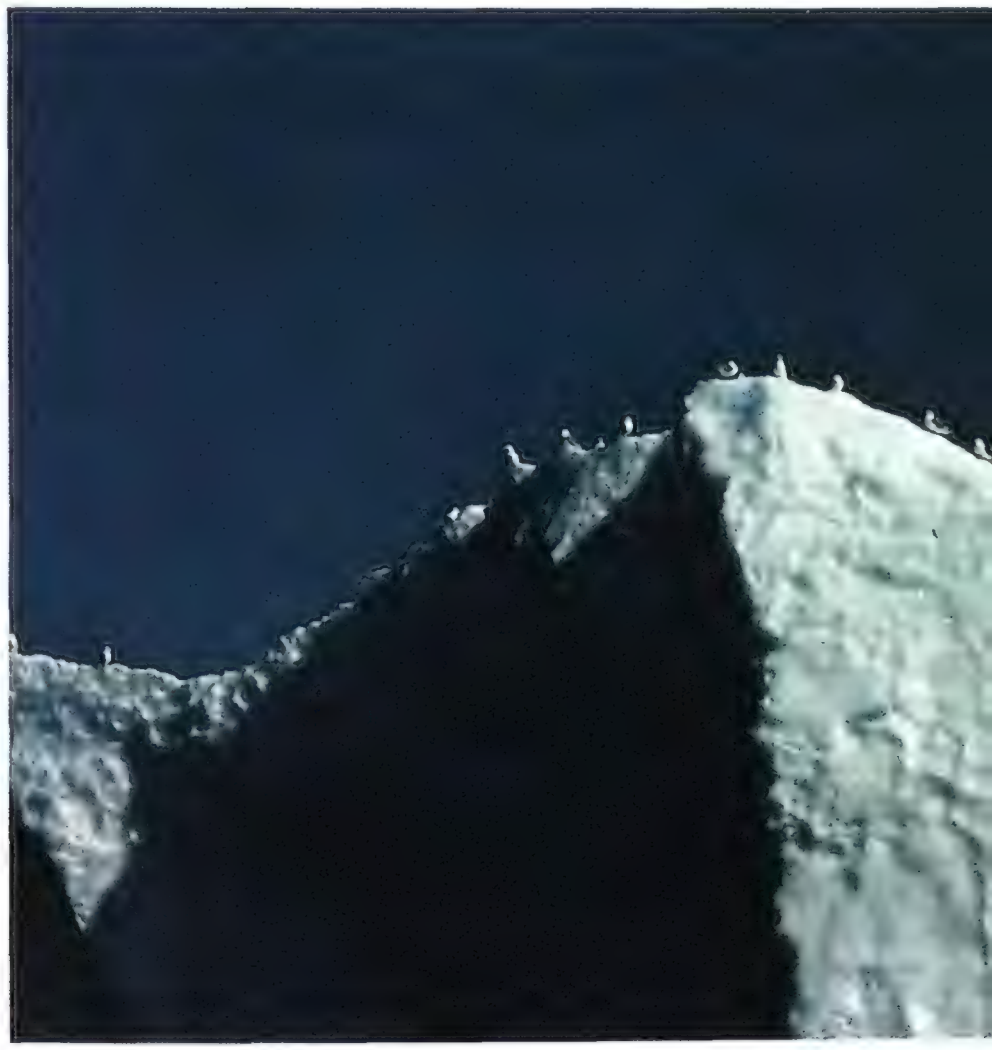
There have been less than a dozen purely pleasure sailboats, amateur-manned, that have sailed to Greenland in the last century. Rockwell Kent's was perhaps the first. The Wright Brittons of New York made a couple of outstanding voyages, and Major H. W. Tilman of England sailed Greenland waters several times and climbed mountains on Ellesmere Island. And in the summer of 1973, *Snow Goose*, captained by George Moffett, got as far north as Disko; that crew gave us some good advice about our own voyage. Northward we sailed in the knowledge that few vessels had been this far except explorers and the vessels supplying Thule base.

We wanted to reach Etah, Peary's base and now deserted. But, approaching Smith Sound, we took a long look from the masthead and saw the passage completely choked with heavy ice. Thus we turned eastward toward Qanaq. About six miles southwest of it, with the huts of the town in full view, we ran into such heavy pan ice that the vessel stopped.

The ketch *Palawan* is built of aluminum, with one-quarter-inch maximum thickness, so we were very cautious about our predicament. Visions of various Arctic explorers frozen in over a winter; visions of how we would explain to our friends what had happened to our vessel; visions of how a helicopter would have to come from Thule to rescue us; visions of dealing at close quarters with water temperatures of 33 degrees F. —all sorts of unpleasant visions of being considered not intrepid explorers but amateur troublemakers— crossed our minds. We cautiously backed the boat into an open lead, and after three hours of work, were able to get her turned around and headed to the open sea.

While we were trapped, the wind from the west became stronger, and rain and sleet pelted us. If a westerly gale springs up anywhere along the Greenland

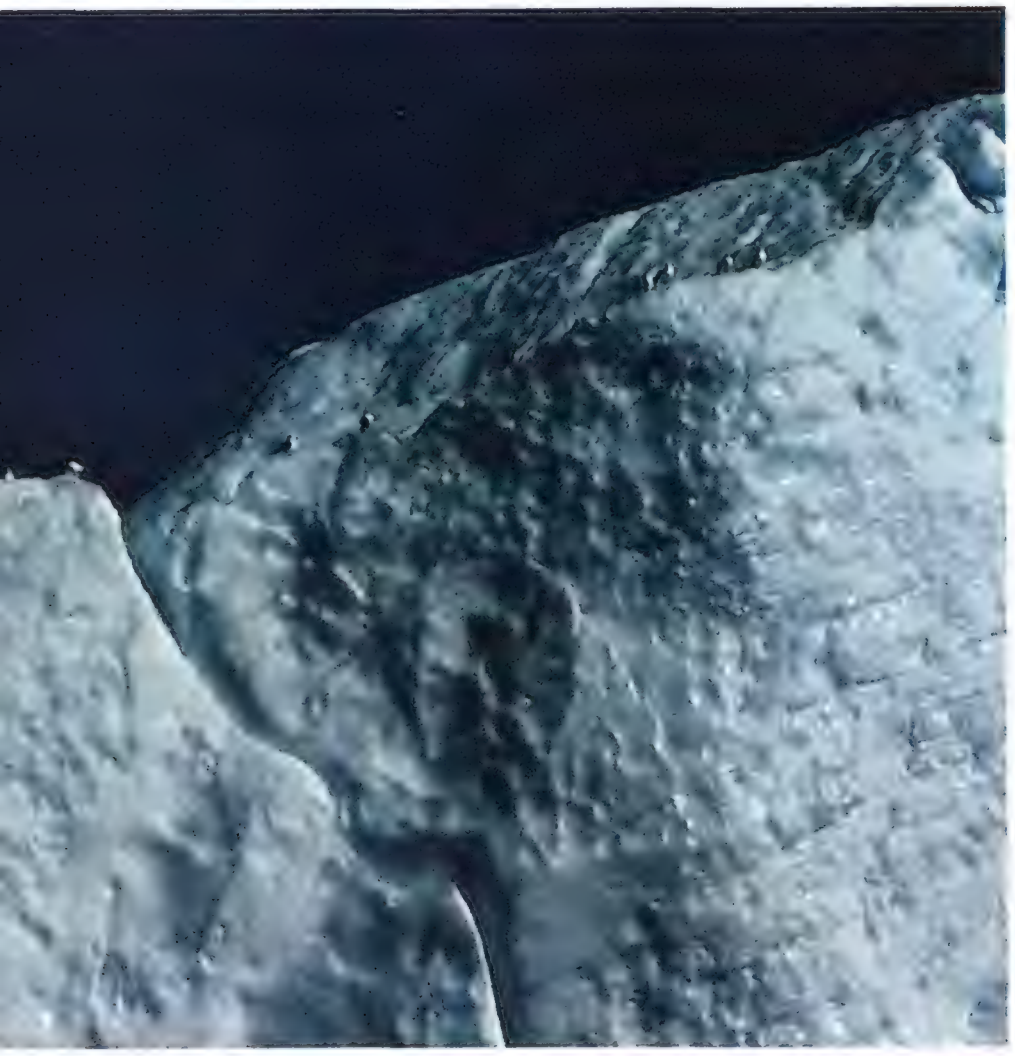
At midnight, icebergs off Disko Island loom ghostlike offshore, etched by the northland's



Herring gulls perch unconcernedly on a calving glacier near Julianehaab. Crack shows where massive

24-hour sunlight. Here whalers from Nantucket once rendezvoused at the island town of Godhavn.

Skipper Watson dons a Viking-type hat, the gift of a friend back home, for his first step ashore.



iceberg is about to be spawned into the sea—presumably to the mild surprise of the roosting gulls.

Navigator James L. Madden, owner-skipper of famous yacht *Gesture,* helped plan the Greenland voyage.

coast, it is possible to be pinned in the ice, or "beset," as old-timers say. If the wind continues long enough, ice can pile up and crush a thin hull like *Palawan*'s.

We were relieved when we finally got free and could turn southward toward Thule, but we were uncertain about our reception at the base. I had kept the Danish government and naval authorities aware of our movement along the Greenland coast, but I had never been in a town long enough to receive a response. Thus, as we moored at the dock, we were apprehensive. But when the Danish authorities and the U.S. base commander, Colonel Harry Casterlin came down to visit us, we felt warmly welcomed. We were invited to have a tour of the base, given Post Exchange privileges, and even allowed to purchase fuel.

The Greek navigator Pytheas sailed out of Marseilles about 300 B.C. to somewhere in the far north, encountered ice and cold and reached the land of the midnight sun, known as *Ultima Thule*, the Latin and Greek name for "Farthest Place." Whether this was Iceland or the northern coast of Norway or just where, no one knows. It was the farthest north that civilized man had gone, and was the reason why the Danes, Knud Rasmussen and Peter Freuchen, 2,000 years later, gave that name to their trading post not far from the present location of Thule Air Base. I had a task to perform in Thule. My friend Lowell Thomas, who has explored a great deal himself, had presented the Thule Officers' Club with a painting of Peter Freuchen. He asked me to see if it was still there. It was.

Leaving Thule, we sailed south, stopping briefly in Godthaab, and finally arrived at Brattahlid where we saw Eric's original homestead, the foundation of his house and the foundation of the tiny eight-foot-square church which he permitted his wife to build, for she had been converted to Christianity. Nearby Halvsey Church, built about 900 years ago, still stands.

All summer we had wanted to board an iceberg, and in Eric's fjord we found one which looked safe—whatever "safe" was! We moored alongside a flat berg and walked all over it. Terribly slippery it was and I was relieved when all were safely back aboard.

Greenland is in a state of tremendous transition. A hundred years ago it had a few tiny Danish settlements, largely trading posts, and the Greenlanders, mostly of Eskimo blood, carried on their kayak and hunting culture approximately as they had done for the past 4,000 years. In summertime they fished and lay around in the sun. But when the bays and fjords froze, they hunted walrus and seal and polar bear and spent their resting periods telling their families and friends of their great exploits as hunters.

Currently the Danes are trying to convert them to a culture based on cod fishing and shrimp, home construction, administration and coastal navigation.

Cross near Julianehaab shows where Eric the Red's wife established Greenland's first Christian church.

Many Greenlanders accept this change with amazing adaptability. Our own pilot, Lars Jensen, a man in his mid-twenties, was as competent in piloting our vessel as anyone could be. But some Greenlanders are demoralized by the rapid change, and give way to alcoholism and idleness.

There is now talk of oil exploration in Davis Strait and off the coast—but I don't know how this could be done. An iceberg can be a mile long and 200 feet out of the water. About eight-tenths of its bulk is under the water, so that it is frequently aground in several hundred feet of water. Imagine what a grounded iceberg would do to a capped oil well! Also, no one seems to have decided how to cope with a very large iceberg in a strong wind to keep it from destroying an offshore platform. The Danes hope to find other minerals along the coast, but as yet they have few operating mines. Barring the discovery of usable oil or other minerals, the Danes face an increasingly large deficit in Greenland.

There is presently no direct air connection from the United States to Greenland. It can be visited by air from either Copenhagen or Reykjavik, Iceland, or by slow cargo ship from Denmark in about three weeks.

Sailing to northern Greenland obviously involves hazards. South of the Arctic Circle there is considerable fog and, of course, many icebergs, so a radar set is vital. North of the Arctic Circle the weather is generally clear, but the coast is subject to sudden vigorous winds, and in a certain combination of ice and lack of harbors, can be very dangerous indeed. However, we had no close encounters with ice except for light taps when we were navigating through the ice pack. Our only other problem was that while charts were generally good, they were sometimes on too small a scale. Our centerboard once touched a rock near Sukkertoppen Island.

During our two months on the Greenland coast we were blessed with good luck that, combined with planning and a study of waters and coast before sailing, made for a relatively uneventful trip.

All of us who cruised to Thule in July and August of 1974 found the trip priceless to do *once*. But I think next time we will take the advice of a soldier on the Thule dock. He said that if he had a sailboat, he would head for the South Pacific.

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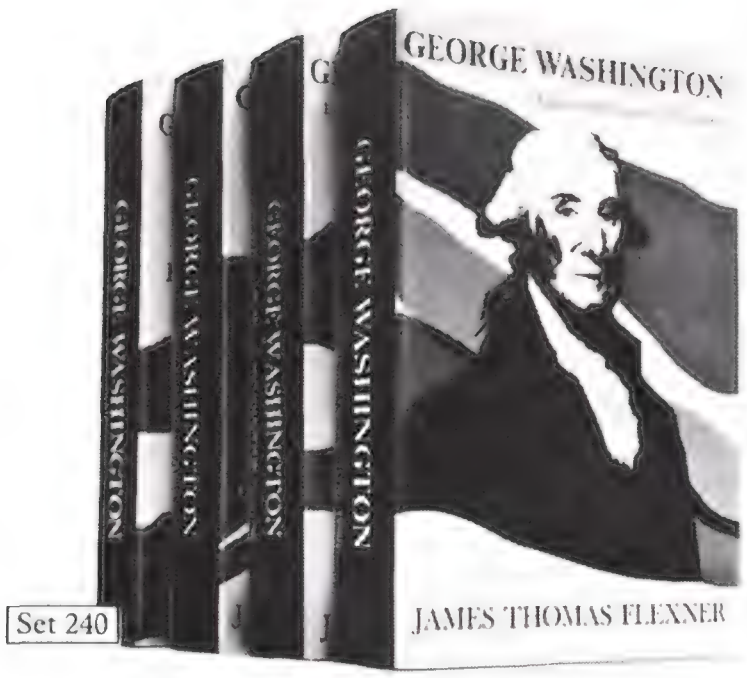

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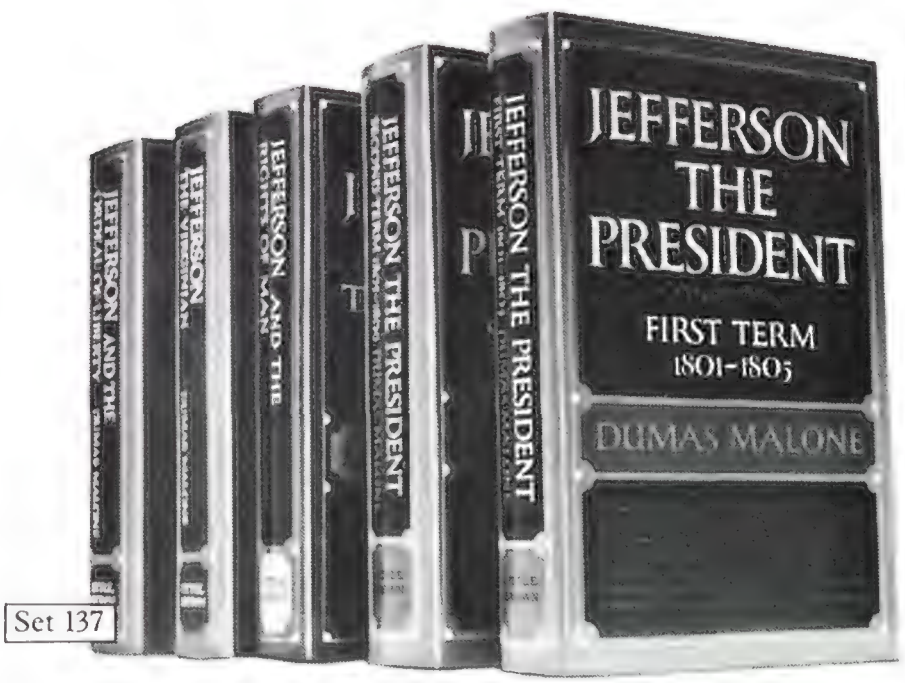

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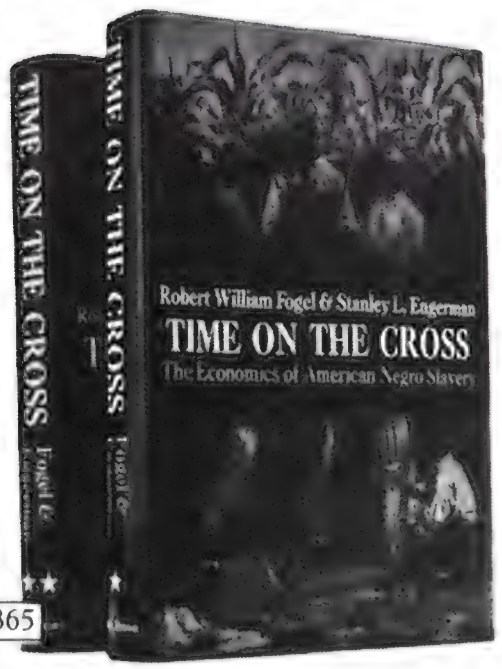

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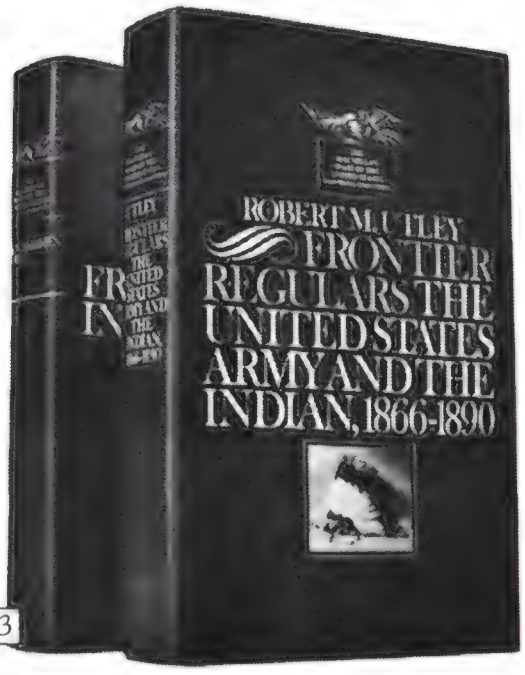

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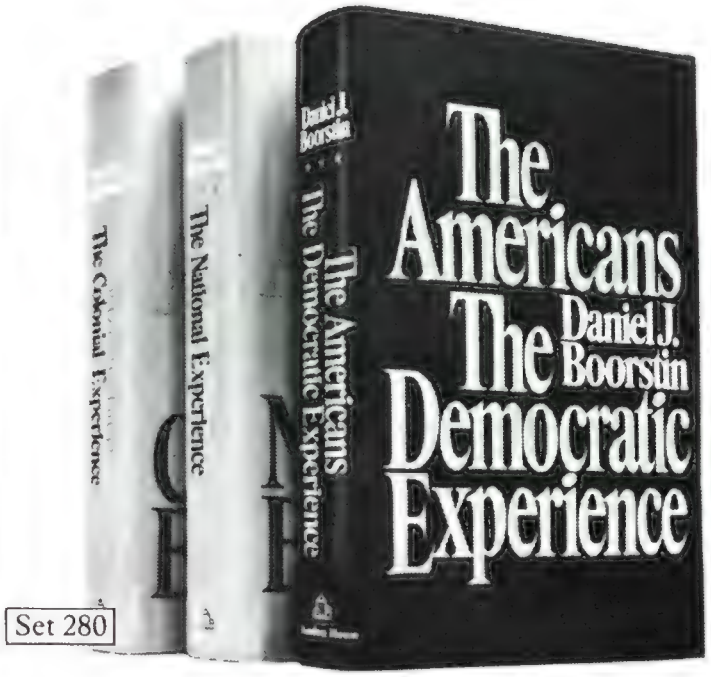

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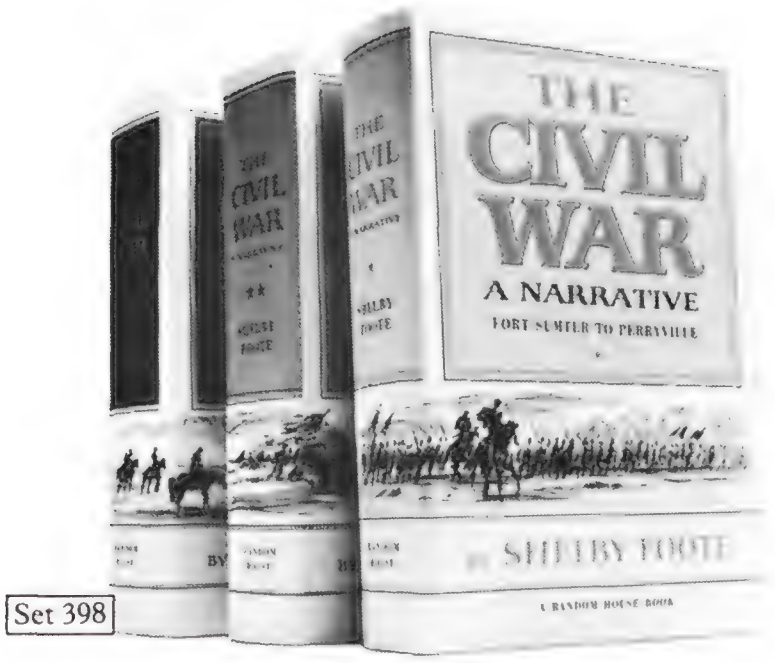

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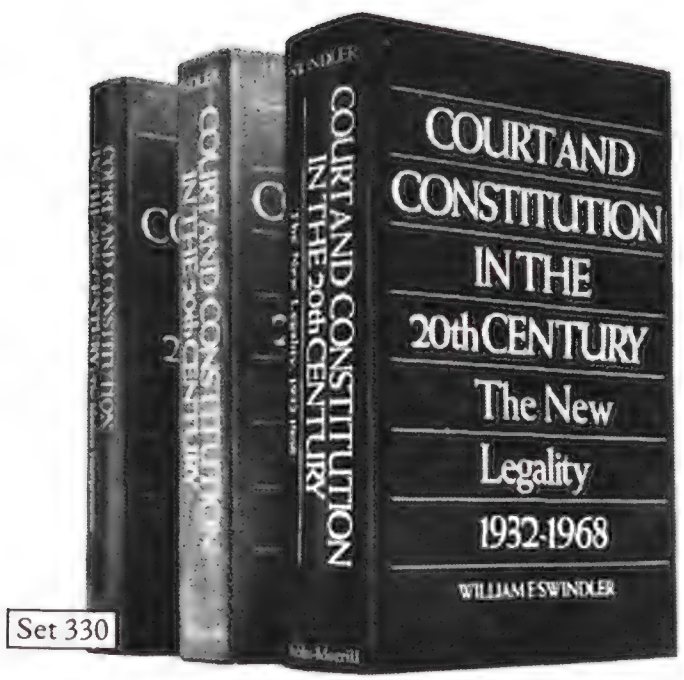

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'Hubbub' of Houston, the Rice Hotel, goes to the great convention in the sky

One recent day the Rice Hotel in Houston, as its patrons had known and loved it for more than six decades, came to an end.

At midmorning of the day of the announced closing, while the last registered guests packed up and prepared to settle accounts to beat the noon checkout deadline, there occurred a poignant scene in front of the main entrance on Texas Avenue that few passersby would soon forget.

Minutes before, by arrangement with the photographer for SMITHSONIAN, the entire remaining daytime staff and management had left their posts and assembled to raise their arms in a cheery, and sad, gesture of farewell. Among the onlookers was an elderly and elegantly dressed woman who blinked away a tear, and said: "If Jesse Jones were alive today, he'd be turning over in his grave."

Some disparagers of Texas wealth, and the portions of it which Jesse Holman Jones had symbolized, have created practically an entire literature of Rich Texan jokes. One of them, sometimes heard around Houston, is that the Rice Hotel may have perpetrated a sham: The great crystal chandelier in the lobby (pp. 50-51), it is suggested, is not festooned with real diamonds at all, at least not of the finest gem quality. More likely, the crystals are nothing but leaded cut glass.

Houstonians with a flair for poking fun at themselves have been known to sidle up to out-of-state guests in the lobby and confide that suspicion. Since everybody took it as an article of faith, energy crisis or no, that the chandelier would never be dimmed, let

Standing below the venerable cast-iron balcony that shields the sidewalk from the Texas sun, Rice Hotel's daytime staff says goodbye on its last day.

It always was the quintessence of Lone Star State hospitality, hoorahing and high jinks, but them days are gone forever

By David Snell

Color photographs by Robert Westerlage

alone go dark, no one was in any great hurry to examine closely the 16,000-odd faceted baubles which comprise the 14-foot oval light fixture, to see if the joke might turn out to be a libel after all. Any notion that a wrecking ball might one day be readied to swing against *the* Rice Hotel was simply unthinkable.

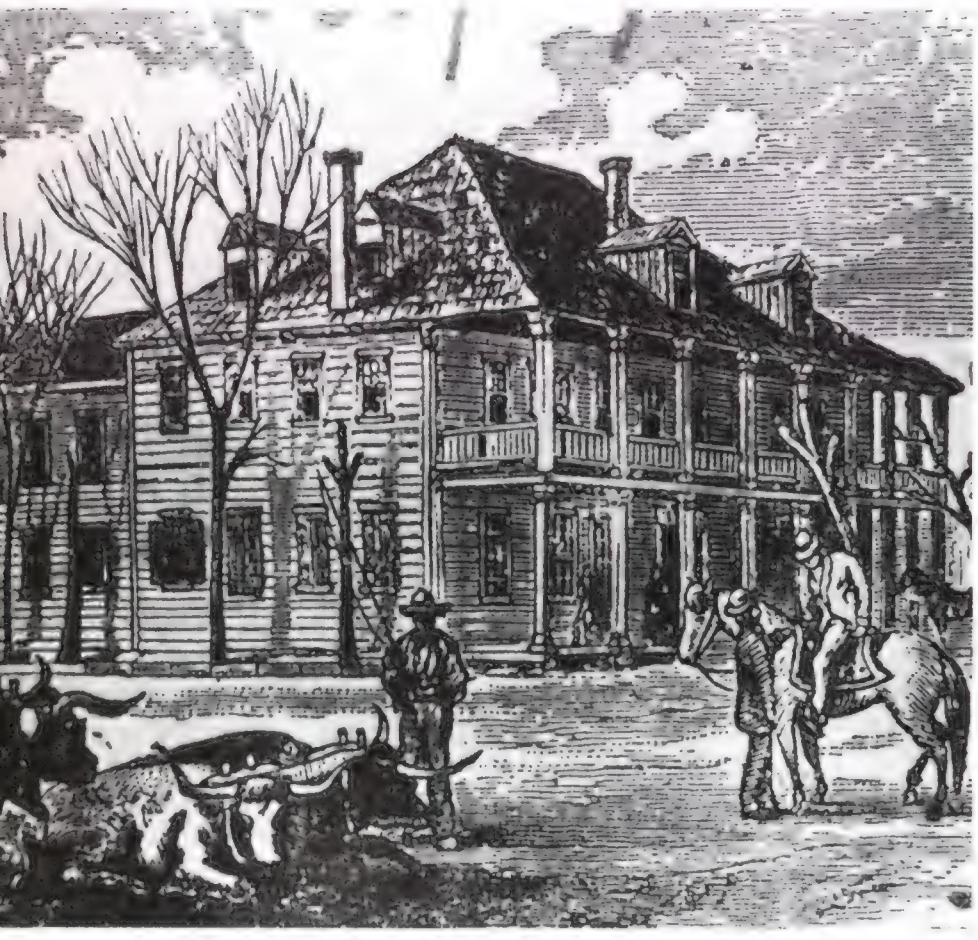
Jesse Jones was the almost legendary Tennessee-born financial wizard who, in effect, became Mr. Texas before World War I, while he was still a young man. He built not only the Rice Hotel but also most of the vintage commercial towers that surround it. The bustling downtown area of Houston was practically his private fiefdom and the Rice its castle. What he might have had to say about the closing of the hotel, had he lived to see it happen, is a fair question.

The ground on which the building stands has been described by author-historian A. Pat Daniels as the most significant city block in Texas.

This was precisely the site of the two-story frame building which served as the first capitol of the newly independent Republic of Texas from 1837 to 1839, and again in 1842. When the Texas Congress voted to move itself, and the seat of government, far away from the yellow fever-infested lowlands of Houston to the hill country hamlet of Waterloo (renamed Austin), the vacated capitol became a hotel. Hotels have occupied the site ever since.

Percy Foreman (p. 57), the famous Houston criminal

The mammoth crystal chandelier, hung by a New York designer in 1960, was festooned with "diamonds."



Old Capitol Hotel, possibly sketched in 1847. Earlier and briefly it had been the capitol of the republic.

Same building about 30 years later, but considerably altered by a widow's walk and a brick facing.

lawyer, recalls the drama that unfolded the first time he laid eyes on the Rice, as a boy. He had accompanied his father to Houston on a business trip, and just as they reached the hotel, young Percy saw a notorious gambler killed in a gunfight in front of the Texas Avenue entrance.

I can recall my own first visit to the Rice with *my* father, who was an alternate delegate to the 1928 Democratic National Convention. Jesse Jones had lured the convention to Houston by handing the party's National Committee a check for $200,000. Much of the caucusing and hoopla took place at the Rice, but my most vivid memory is of the scuffling and shoving in the lobby caused by the arrival of a man with free samples of Texas-made fig cookies.

During that convention, at which FDR made the nominating speech for Alfred E. Smith in the huge barn of a convention hall that Jesse Jones had promised for the occasion, it is a matter of record that tempers turned edgy as temperatures soared. One rancher, who had come to Houston on other business, became exasperated when the crowded elevators kept passing him up. Finally he emptied his six-shooter into an elevator door, moments after the car had descended.

John Ragley, who was a member of the Rice man-

Mr. Snell's chronicles of life in the new and old West frequently appear in the pages of SMITHSONIAN.

The same site, but by 1893 there was a five-story annex on Main Street. At right is the Rice Hotel today.

agerial staff until his retirement several years ago, vividly remembers the visit by Crown Prince Faisal of Saudi Arabia, who later became King Faisal. While bellhops and chambermaids looked on aghast, the royal bodyguards swept through the suite he was to occupy, slashing into dark corners of closets, behind draperies and under beds with their razor-sharp scimitars, just in case somebody was lurking. To discourage any knife-throwing practice, the management covered the walls with Arab tapestries.

The visit must have reminded somebody of an earlier one at the old Capitol Hotel, shortly after the government had moved to Austin. A room clerk who was racially enlightened, or protective of his scalp, permitted a party of Indian braves to check in. Apparently they felt uncomfortable about the furniture in their accommodation and had it removed. Then they settled down on buffalo hides provided by the management and proceeded to practice throwing their tomahawks at the walls.

Murder has been committed and suicide attempted at the Rice. One woman was hacked to death by her lover, and another, who happened to be a client of Percy Foreman, shot herself in a public telephone booth in the main lobby. Invariably, when such things happened, the staff maintained an impeccable decorum in order not to disturb the other guests.

There was a rigidly enforced rule against pets, but this being Texas, the no-animals rule naturally never applied to horses. In the old days the cattlemen's conventions held in Houston were wild and woolly, and it was not at all uncommon for a rancher to ride right into the lobby and sign the register without dismounting. During the Democratic National Convention a female rodeo star rode her mount up the stairs to a then-existing mezzanine and hitched it to a potted palm while she went to the powder room.

When the great quarter horse champion Cutter Bill came to Houston several years ago as a star attraction at the Houston Livestock Show and Rodeo in the Astrodome, the Rice not only allowed its owner, oilman Rex Cauble, to bring the animal in for a visit but even rolled out its red carpet. Entering through the motor lobby, Cutter Bill stepped smartly into an elevator to be whisked to the fifth-floor Press Club where he was served a drink (below).

Whenever the worst happened, as it did on a carpet during Cutter Bill's visit, or when fights or other violence caused wreckage or bloodshed, the housekeeping staff would swiftly and efficiently move in to tidy up.

One tragic event which affected the future of the hotel occurred in the year 1900 in New York City. This was the murder of William Marsh Rice, at the age of 84, by his valet, who pressed a chloroform-soaked rag to Mr. Rice's face.

A merchant who had come to Houston from Massachusetts in 1838 and built a fortune in lumber and land holdings, Rice had bought the Capitol Hotel for unpaid taxes in 1886, and six years later had added a five-story annex facing Main Street. Upon his death, most of his estate, including the land under the hotel, was added to his endowment of Rice Institute (which is now Rice University). The deed stipulated that any hotel on that site, then and in the future, must be named Rice.

A little over a decade later, Jesse Jones bought the hotel and signed a 99-year lease for the land. Jones had a vision of the city that Houston would become, and he knew that the first order of business was the creation of a splendid modern hotel.

While contractors began razing the existing structure, Jones himself drew plans for the new hotel, then,

While Rice rules against pets were strictly enforced, horses were another matter. Here, champion quarter horse, Cutter Bill, receives a liquid greeting as owner Rex Cauble looks on.

on a vacant lot, erected the ground floor to scale. On May 17, 1913, the new Rice had its grand opening. The entry at the top of the first page of the register was Jesse H. Jones.

In 1932 Jesse Jones went to Washington to head the Reconstruction Finance Corporation. He stayed on to serve as President Franklin D. Roosevelt's wartime Secretary of Commerce. During his Washington years his visits back to Houston were infrequent.

On one occasion, while he was at the RFC, he flew down to attend a banquet in his honor at the Rice. With everything in readiness and 600 notables sitting at the tables in the Crystal Ballroom, a reception committee waited out front to escort the guest of honor upstairs to the dais.

The entourage arrived and a moment later Jesse Jones came striding through the lobby with the committee, toward a waiting elevator. "Now, hold on a minute," he said. "I've got to say hello to my boys."

Thereupon he sauntered to the desk and for 15 minutes swapped howdys and small talk with the night clerks, cashiers, porters and bellhops, while the business, financial and political leaders of Texas cooled their heels. He simply wanted a firsthand report on what had been going on at the Rice.

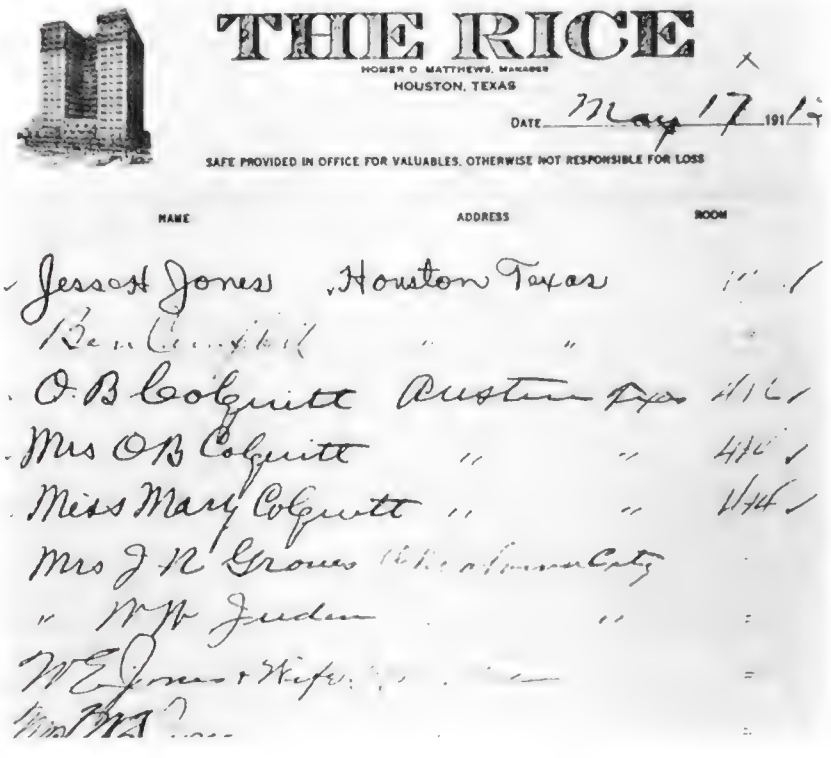
High jinks and homey hospitality

Never, outside the Rice's acre, was there a stage for so heady a circus of Texas-style high jinks, hoorahing and high-rolling, highfalutin business and social hobnobbery. And never in Texas, nor anywhere else, likely, was a homier brand of hospitality bestowed so easily upon princes, potentates, presidents and just plain people who came from all over hell and gone.

"I tell you what it was about this here hotel," said a city policeman who moonlighted as a guard at the Rice during the last days, to discourage souvenir hunters. "Ever since I can remember, the Rice has always been at the very *hubbub* of Houston."

Jesse Jones would have liked that way of putting it. From the beginning of his Houston career he believed in the concept of centralized urban development. The bigger the towers of commerce, and the more tightly they were bunched, the more potent the city would become. To business and banking leaders in the Jones orbit, it must have seemed an act of madness and downright impertinence when, in the late 1940s, the wildcatter Glenn McCarthy went four miles down Main Street to stake ground for a new super-hotel, on a patch of prairie where one might have expected him to drill a test well. Houston had never seen anything to compare with the flamboyant opening of McCarthy's Shamrock Hotel on St. Patrick's Day of 1949, and likely never will again.

Legendary Houston-booster, Jesse H. Jones, shown above at age 18, about 20 years before he made his fortune, bought the Rice Hotel and, at its gala reopening in 1913, signed in as its first guest.



THE RICE

HOMER O. MATTHEWS, MANAGER

HOUSTON, TEXAS

DATE May 17 1913

SAFE PROVIDED IN OFFICE FOR VALUABLES. OTHERWISE NOT RESPONSIBLE FOR LOSS

NAME	ADDRESS	ROOM
Jesse H Jones	Houston Texas	[illegible]
Ben [illegible]	" "	
O B Colquitt	Austin Texas	412
Mrs O B Colquitt	" "	412
Miss Mary Colquitt	" "	414
Mrs J N Groves	[illegible] City	
" W W Juden	"	
W E Jones & Wife		
[illegible]		

In 1925, Mrs. J. Sayles Leach, the former Daisy Ewing, wore a Russian costume to the debut party of April Jackson. Fifty years later (below), she kicked up her heels at hotel's swinging farewell party.

Artist Eugenia Howard met husband Wilmer Hunt the night of her debut at the Allegro Ball in 1929. Last spring she and Mr. Hunt, now a Texas judge, returned to help bid the Rice goodbye.

Celebrities arrived by the trainload from Hollywood, and everybody who was anybody in Texas turned out. Jesse Jones, who could have been forgiven for staying cold and aloof, of course did no such thing. Like everybody else he went to the Shamrock, and got hopelessly stuck in the mob scene at the front door. On that night the winds of change blew like a hurricane, and there was Uncle Jesse, right in its eye.

From then on it was only a matter of time before Houston would explode all over with new hotels, elegant shopping areas, and towering outpost clusters of business and commerce. Jesse Jones could hardly have failed to see it coming.

But the Rice Hotel, "Houston's traditional host," had a lot of tradition going for it. By old habits that were going to be hard to break, the Rice was where things happened.

For decades Houston's mayors and police chiefs understood without having to be told that Uncle Jesse would be pleased to have all downtown parades routed past the Rice so that the guests could go out onto the balcony and watch. Had any marching band chosen to strike out on its own along a different route, the heavens, if not the balcony, would surely have fallen.

Many of the social events and cotillions which took place at the Rice have become Houston legends. One year long, long ago, Colonel and Mrs. O. T. Holt gave some debutantes a Wagnerian opera party. At a nearby music hall they heard the first half of *Parsifal,* then repaired to the Rice for dinner during a long prearranged intermission while the cast and orchestra waited and wondered at the ways of Houston society.

The bill of fare on such occasions could be as regal as anyone cared to command. At one Allegro Ball in the 1920s, debutantes and their parents and escorts feasted with chopsticks on broiled hummingbird on toast prepared by Chinese chefs who had been flown in from San Francisco and New York. Houstonians still recall the brilliant debuts of Bess Kirby and "Bootsie" Seagraves. Kirby, a lumberman, is reported to have spent $50,000 to have a New York decorator refurbish the ballroom for just the one night of his daughter's coming-out.

Prelude to tragedy

Never did the banquet staff face a bigger test than the 1958 banquet of Houston's Congregation B'rith Shalom. It was kosher, with meticulous rabbinical supervision. To avoid the contaminating touch of anything that had ever been used for milk or other dairy products, the hotel laid in full services of new dishes, utensils, silver vessels and glassware.

On November 21, 1963, President and Mrs. John F. Kennedy dined in private in the International Suite, on bird's nest soup, quail with Strasbourg foie gras, a Chateaubriand from a Texas Black Angus garnished with artichoke hearts, and heart-shaped ice cream molds decorated with candied violets. They used the gold flatware that was normally kept in a vault like crown jewels. It was his last dinner.

In 1928, in the absolute certainty that cowboys would show up at the last minute without reservations and wouldn't object to a bit of open-air roughing it on the Rice roof, Jones built a shed on the west wing, to be used as a bunkhouse. Throughout the sweltering convention it caught the breezes off the Gulf and was the coolest place in town.

During the Depression the bunkhouse, which was intended originally to be only temporary, became the "Top Deck of the Rice" or, as people called it, the Rice Roof. The roof became the most popular dance spot

Hotel staff members keep an eye on the "gold" cutlery—for 75—which has served presidents and kings.

that Houston ever had. Most of the bigtime bands played there—led by names like Paul Whiteman, Coon Sanders, Woody Herman, Vincent Lopez, the Dorsey brothers, Gus Arnheim, Freddy Martin and Ted Weems, whose band featured a young male vocalist named Perry Como.

In 1953, Jesse Jones underwent gall-bladder surgery and three years later, in a condition of rapid physical deterioration, he entered St. Luke's hospital. On June 1, 1956, as the downtown towers cast their longest shadows in a deepening summer twilight, Jesse Jones died at the age of 82.

As though by the momentum which Jones imparted to all the things he created, the Rice continued to evolve and grow. From the beginning there had been a continuous program of refurbishing and modernization, and in the first years after Jesse Jones' death some of the changes were impressive.

Somehow, though, the Rice was showing its years, like an aging beauty who tries to hide wrinkles with pancake. Mostly it was the little things that stood out, the touch-ups, the routine repairs, the panel of wallboard here, the fake beam there. All this produced a kind of do-it-yourself eclecticism. There was a look of cross-purpose by committee, of plasticized patching and piecework, of papering-over, of caked-on paint.

"Let's face it," said one grande dame of Houston society who has aged more gracefully than the hotel, "the Rice is just plain tacky." To be sure, tackiness by itself is not necessarily terminal, but there were other considerations, some of ominous portent, and there were the inexorable turns of events.

Put up or shut down

After the death of Jesse Jones, the bulk of his holdings, including the Rice Hotel, went to Houston Endowment, Inc., a philanthropic foundation which he and his wife had set up. In 1971 Houston Endowment gave the hotel to Rice University, which already owned the land. In the first two years after this transaction, the hotel made money and the trustees were glad the university was in the business. But last year, as the recession deepened, the hotel slipped into the red. Meanwhile, the city of Houston adopted a new fire code which spelled more trouble.

From a practical standpoint, and from past experience, the Rice was considered one of the safest hotels around. The new code, however, would have required extensive modifications. By best estimate, the university figures it would cost $1.2 million to bring the hotel up to compliance.

It was a put-up-or-shut-down situation. In the end, pragmatism took over. The day after the closing, the Rittenhouse Capital Corporation, a New York concern, offered to buy the building and reopen the Rice as a very different kind of facility. It would be a kind of executive hotel and office tower, with permanent office space and meeting rooms, primarily for multinational corporations. The old Rice, with its homey and personalized touch and its clientele of people who simply liked to go there, was gone forever.

The closing of the hotel that Jesse Jones had built was a very special milestone deserving a special observance, and Houstonians by common impulse realized this even as they accepted the logic of what was happening. There *had* to be a Last Dance at the Rice.

And so, the gala event took place—dancing and cocktails on the now glass-enclosed Rice Roof, then dinner and more dancing in the Crystal Ballroom. Hundreds of Houstonians with private memories of the Rice, and some with very long ones, crowded in at $150 a couple (or $1,000 for a table), with proceeds going to Houston's Contemporary Arts Museum.

The dinner was excellent, the service impeccable: For there to have been any relaxing of standards would not have been in keeping with tradition. Finally, after a style show on a theme of nostalgia, there was dancing, wild and swinging, then slow and dreamy, as Buddy Brock's orchestra evoked the sounds of big bands.

At midnight the party came to an end—with the playing of *Auld Lang Syne,* of course. Only then did some members of the staff, mostly the older ones, permit themselves the privilege of stepping out of their customary roles. They wept.

An 89-year-old hotel "expert," Mrs. Byrdie Cox Sias, enjoyed a quiet moment on last day of the Rice.

Renowned defense attorney Percy Foreman received last cup of coffee at the hotel he frequented daily.

Not many get the chance to own a classic. Even fewer get the chance to build one.

Introducing four classic car model kits by Pocher d'Italia. What makes them expensive are their authentic components. What makes one of them unique is about a hundred hours of your kind of concentration.

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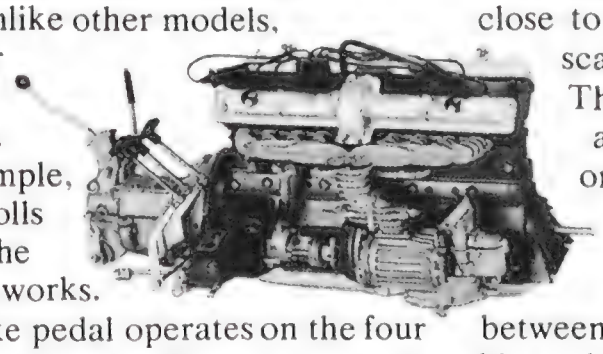

The suspensions, of lined steel, are perfectly efficient. The headlights turn on from the dashboard. The crankshaft with connecting rods, pistons and gudgeon pins all operate when you turn the crank. At the same time, by means of V belt and gears, the fan, generator and magneto also operate.

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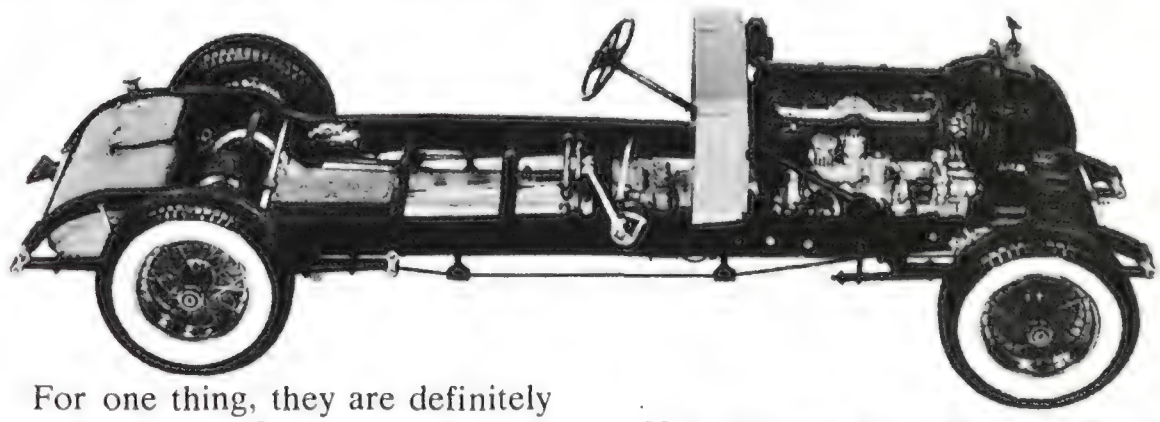

For one thing, they are definitely not picayune. Completed models range from 18½" to 26½" in length.

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By Dennis Farney

Restoring prairies is tougher than just a planting job

Before we had amber waves of grain, we had tallgrass. Efforts are afoot to save what still remains and even to extend its range

Prairie grass is shaggy grass, rough and ragged, with the memory of the Ice Age in its genes. It has learned how to endure, as has the prairie itself. For 10,000 years the prairie has been evolving in eastern Kansas and a few other parts of the Midwest and Northern Plains, weaving its Persian carpet of grass and wildflowers through blizzard and wind and burning sun.

Range after range of grassy hills seem to billow and swell beneath the great blue vault of the prairie sky. There is exhilaration in this empty, sweeping landscape. And when the brassy noonday light softens into shades of red and gold, when shadows edge out into the wooded valleys, there is serenity as well.

The wind dies down at such a time and the western meadowlark pours out a song so clear and lilting that it gladdens the heart. As the sun winds down behind a distant range, the sky turns luminous with reds and pinks and oranges. Finally, when only starlight glimmers on the prairie, the land itself seems to come alive in the dancing light—shimmering, waiting, enduring.

The tallgrass prairie still survives in the Kansas Flint Hills, the kind of country that had all but vanished before most living Americans were even born. It is a gay tapestry of wind-tossed color and motion, crowned by the majestic big bluestem grass, which grows eight feet tall on favored lowland sites. (It is this height that distinguishes tallgrass prairie from the two-to-four-foot-high midgrass prairie farther west and the inches-high shortgrass prairie on the semi-arid High Plains.)

Once the tallgrass prairie stretched all the way east to Illinois and western Ohio, a semicontinent rippling in the wind like waves upon a sea. But no other natural community was so disrupted by the settlers. They broke the prairie with plows, and listened to the curious popping, ringing sound as the steel plowshares sliced through the matted prairie roots. The region became a checkerboard of corn and soybean fields. And the tallgrass prairie became America's forgotten landscape, dismissed as "just grass" by a generation that had never seen its gay profusion of wildflowers, had never listened to prairie chickens booming on an April morning, had never sensed a sky so big or horizons quite so far away.

But in this 50-mile-wide band of hills, protected by a soil too thin and stony for the plow, the tallgrass prairie still survives. And so it is that the Flint Hills have become a focal point for a classic environmentalist-vs-landowner struggle, and also for a much broader movement that seems to have sprung up spontaneously in the last decade. People, in short, are rediscovering the forgotten landscape. Some are trying to preserve as much as possible of the virgin prairie that remains, while others are attempting something perhaps even more difficult. They are trying, against all odds, to recreate the prairie's intricate ecosystem upon plowed fields and worn-out pastures.

"People realize that something has fallen apart and they're finding a great challenge in trying to put it back together again," says prairie restoration expert Jim Zimmerman of the University of Wisconsin Arboretum. "And prairie restoration is so complicated and so fascinating that once they start they find they just can't stop."

A void in the park system

Led by a group called Save the Tallgrass Prairie, Inc., environmentalists are pressing for a Tallgrass Prairie National Park on 60,000 acres of Flint Hills land. This would be an area about ten miles by ten miles, or roughly one-third of one percent of all the grasslands in Kansas. The park would fill a void in the National Park system, which contains no sample of tallgrass prairie. It would be large enough to convey a sense of limitless space and large enough, too, to support perhaps 2,000 free-roaming bison, as well as golden eagles, deer, elk, pronghorn antelope and other prairie wildlife.

Opposing the environmentalists are Kansas ranchers

A mule deer peers over tallgrass growing in North Dakota's Theodore Roosevelt National Memorial Park.

Photographs by Patricia Duncan and Steven C. Wilson

Track through virgin tallgrass and midgrass found in the sandhills of north-central Nebraska.

and others organized as the Kansas Grassroots Association, Inc. The opponents argue that the Flint Hills prairie survives today only because of the ranchers' intelligent management over the years. They worry about the impact of tourists and tourist facilities on their spare countryside of rambling stone fences and limestone houses, isolated ranches and pleasant little towns like Cottonwood Falls and Council Grove. Former Interior Secretary Stewart Udall came to inspect the Flint Hills in the 1960s; a rancher ran him and his helicopter off with a shotgun.

Passions are still running high; in April the Kansas legislature dealt a severe blow to the park proposal by passing a nonbinding resolution requesting the federal government not to establish a park on private land in Kansas. However, efforts at the federal level are continuing and conservationists hope to reverse the sentiment in the Kansas legislature through an intense educational program.

Meanwhile, the broader prairie movement is accelerating in a variety of forms:

- The Nature Conservancy, a national, nonprofit organization dedicated solely to preserving ecologically valuable land, has turned to prairie preservation and restoration in a major way. In recent years it has snapped up major tracts in Kansas and Missouri, a virgin prairie in the shadow of Chicago, waterfowl-rich country in the Dakotas—thousands of acres in dozens of projects.
- State highway departments—Nebraska's, for example—are saving money by planting their roadsides to low maintenance native grasses and wildflowers. Kansas City, Missouri, is planting the grounds of its new jetport to prairie species.
- Perhaps most intriguing of all, hundreds of ordinary people are sowing prairie grass and wildflower seeds from Kansas to Connecticut. Among them are grade school children in Madison, Wisconsin, a retired Army captain in Missouri, farmers and ranchers on the Great Plains, a doctor in Kentucky and a cookie company executive in Minnesota.

What these prairie restorationists are trying is infinitely harder than seeding a new lawn in some suburban yard. That's because a prairie is not "just grass." It is a mixture of grasses and anywhere from 200 to 300 species of wildflowers; it is a perennial flowerbed that blooms in ever-changing patterns from April to October. And while the prairie grasses are difficult to reestablish, the wildflowers are often all but impossible.

Establishing a prairie is one thing—maintaining it is a never-ending controversy. For unless a prairie is used—grazed regularly and burned off periodically—many of its species drop out. A prairie, says environmentalist Richard Pough, may be "the most complex ecosystem of forbs [wildflowers], grasses, microorganisms and fungi on Earth. . . ."

Those who know the prairie restoration movement the best suspect that it grows out of a national yearning

More than just grass, a prairie hosts hundreds of species of wildflowers, including black-eyed susans.

for authenticity and stability. Listen to Jim Wilson of Polk, Nebraska, a retail supplier of grass and wildflower seeds and a sort of spiritual grandfather to the prairie movement.

"The whole country is gripped in a feeling of apprehension and uncertainty and anxiety about the future," Jim Wilson says. "People seem to long for something that will give them a sense of security and continuity and permanence, and somehow these prairie grasses and flowers seem to do it. The darn things seem to reassure people somehow. They represent permanence and persistence in the face of danger . . . *persisting* things, you know."

Wilson and his wife Alice now keep in touch with a growing band of several hundred restorationists, encouraging them with seed and advice and exhortations to keep the faith when weeds swallow up their new plantations. One of their favorite customers is a Madison Avenue advertising man who has planted a field of prairie grasses 20 miles up the Hudson River. Some days leave him so frazzled, he once confided to Wilson, that it seems that nothing short of a double martini can set things right. Then, instead of reaching for a drink, he goes out to sit in his grass.

If nothing else, the growing restoration movement indicates that, in grass as in everything else, fashions change. A century ago the native prairie growth was scorned as coarse and unrefined, even by such legendary champions of grass as John James Ingalls, a U.S. Senator from Kansas. History probably best remembers Ingalls as the man who declared: "Grass is the forgiveness of nature—her constant benediction." But Ingalls was talking about Kentucky bluegrass; for the shaggy Kansas natives he had nothing but disdain. Prairie grasses, he explained, "will nourish mustangs, antelope, Texas cattle, but not thoroughbreds."

"But bluegrass! Bluegrass does more than nourish splendid horses. It supports a whole society of 'muscular' men and 'voluptuous' women; upon its foundations rest palaces, temples . . . peaceful institutions, social order." Seed Kansas to bluegrass, Ingalls promised, and in time—say three generations—it, too, could became another Kentucky.

Coincidently or not, Kansas did plant a lot of bluegrass, which promptly demonstrated a robust ability to invade overgrazed prairie and crowd out the prairie natives. Today prairie restorationists lie awake nights thinking up new ways to eradicate the stuff—as well as to overcome the numerous other threats to their vulnerable prairie plantations. For as Wilson puts it, "When we bypass the natural plant succession processes and restore cultivated lands directly to native prairie grasses, we defy nature."

The reason is that almost nothing in 10,000 years of evolution has equipped prairie plants to take hold in disturbed soil, such as a plowed field. But just the opposite is true of the prairie's greatest enemies, the Eurasian weeds and grasses brought to North America by the settlers. By the time the settlers ventured forth, vast areas of Eurasia had been under cultivation for thousands of years. In that time, the Eurasian species had adapted superbly to disturbed soil, developing remarkable seedling vigor and the ability to capitalize upon the soil changes that come with cultivation.

As a result, the deck is stacked against the prairie natives for the first year or two. "The first year, chances are you'll have a weed patch," warns Wilson. "If you don't get disgusted and plow it up, the second year you'll probably have a miracle."

The native seedlings come up, all but invisible, and are immediately swallowed by the weeds. To give the slow-growing prairie plants a chance, it is

Mr. Farney is White House correspondent for the Wall Street Journal *and a native Kansan. He wrote about radioactive waste disposal in* SMITHSONIAN, *April 1974.*

Kansas State University students apply fire to grass in experiments carried out on the Konza prairie.

necessary to mow the weeds two or three times. "At best, your prairie will be only six inches high after the first year," says biologist Peter Schramm of Knox College, another restoration expert. Happily, this appearance of fragility is misleading.

Ten thousand summers on the dry and blazing plains have taught prairie plants not to grow up their first summer—but to grow down. So even as the weeds are overshadowing them topside, they're sending down roots at a furious rate. A big bluestem seedling only one inch tall may have a 12-inch root system. A mature plant will have a whole bundle of roots extending nine feet down. By the third year or so, a stand of native grasses will be choking out the weeds.

Restoring prairie wildflowers is a much more laborious proposition. It has taken the University of Wisconsin Arboretum staff since 1936 to restore about 100 acres of prairie with about 300 species of wildflowers and 25 kinds of grass. By hand-seeding plowed land, arboretum officials have produced self-perpetuating prairies that, to the untrained eye, look quite authentic. By raising plants in greenhouses and then setting them out by hand, and by transplanting clumps from relic prairies in the area, the Morton Arboretum at Lisle, Illinois (about 25 miles west of downtown Chicago), has invested thousands of dollars and thousands of man-hours to reestablish about 120 prairie species on ten acres of weedy farmland.

Today there's an easier way. It lies in a remarkable grass planting drill which, in Jim Wilson's words, can "plant anything from pepper to feathers." (Ordinary grain drills, used to plant such things as oats and wheat, can't handle the fine, featherweight prairie seeds.) Using this special drill to plant a mixture of grass and wildflower seeds in a crosshatched pattern, Knox College's Schramm has been able to establish a natural-looking prairie facsimile of about 30 wildflower species and half a dozen grasses within five years.

None of these restorationists would argue that his facsimile is anything more than a pale imitation of a virgin prairie. Can man ever hope to re-create the real thing? "Given infinite patience," says Morton Arboretum's Ray Schulenberg, "given resources in the way of seeds and in the way of help, given knowledge of soils, given our cumulative knowledge of plant requirements, it would be possible to create a pretty decent prairie in about 100 years." Schramm's estimate: 300 to 500 years.

Even then, both men agree, the restored prairie would still fall short of the original exuberant landscape. One reason is that some prairie plants have become extinct since 1541, or so close to it that the distinction hardly matters.

At the University of Wisconsin Arboretum, naturalist Jim Zimmerman has been observing one such plant for 29 years. It is an endangered species, a green milkweed. As far as Zimmerman knows, there are only three plants in the entire state. Not once in 29 years has Zimmerman's plant set seed, not even after attempts to pollinate it artificially. The presumed reason is that the species of bee peculiarly adapted to pollinating this plant has itself become extinct. Zimmerman hopes to propagate his plant vegetatively. But even if he succeeds, the species seems doomed to remain forever barren, an eerie symbol of death-in-life.

Trouble with hoary puccoon

Another problem for would-be restorationists is that disturbed soil typically lacks the complex infrastructure of fungi and other microorganisms, mites and insects found in virgin prairie. Certain types of fungi, for example, seem to form an interrelationship with the roots of prairie plants that is essential for their survival. This was brought home to Schulenberg when he attempted to reintroduce, by means of greenhouse-grown seedlings, an orange wildflower with the intriguing name of hoary puccoon.

"The little guys just barely hung on year after year, and eventually they died away," he says. Meanwhile, however, Schulenberg had also planted other hoary puccoons that a friend had salvaged from a relic prairie being bulldozed. The clumps of prairie soil apparently contained colonies of microorganisms. These flowers are doing beautifully.

Seed of such prairie grass species as big and little

bluestem, Indiangrass, switchgrass and sideoats grama are relatively cheap and available in improved strains. This is due, in large measure, to the work of the Soil Conservation Service. Ever since the Dust Bowl days, the SCS has been collecting and evaluating grass seed from Texas to North Dakota and periodically releasing superior strains to commercial growers and the retail market. But wildflower seeds still cost up to eight dollars an ounce. Now, however, the agency has turned to wildflowers as well.

At its Manhattan, Kansas, Plant Materials Center—surely too prosaic a name for so poetic an institution—the agency is evaluating, for probable commercial distribution, various ecotypes of about 20 wildflower species. (An ecotype is a strain within a given species which has adapted itself to the precise conditions of a relatively small area.) Within five years or so, the center hopes to distribute foundation seed to commercial growers. Soon after that, the wildflower seeds should be widely available at lower prices.

Although this promises to accelerate the restoration process, some purists worry about the SCS's work. The agency has shown that a given ecotype, if transplanted to the north, usually will outperform the ecotype native to that area. Evolution has programmed the southern plant for a longer growing season and it tries, in effect, to stretch the shorter northern season by greening up earlier in the spring and blooming later into the fall. The effect continues until the southern ecotype has been moved so far north—say 200 to 300 miles—that it can no longer cope with the colder climate.

Mixing up the gene pools

What worries the purists is that the "foreign" ecotypes will overwhelm the natives. "We're getting our gene pools all mixed up," says Knox College's Schramm. "I urge people to gather local seed from relic prairies nearby." SCS officials and others counter by arguing that, in time, the "foreign" ecotypes will gradually adapt themselves to their new homes, eventually becoming quite similar to the natives there.

This argument is almost academic to the proposed prairie park, because little reseeding would be necessary to restore the Flint Hills to prime condition. Instead, the park would simply be left alone while its native vegetation came back, then managed in such a way as to restore, as closely as possible, the kind of use it received before the white man came.

The park managers would use controlled burning to duplicate the recurrent prairie fires that swept the original prairie (see photographs opposite and above right). Set by lightning or by Indians to stampede the bison, those fires burned off trees and shrubs before they could gain a foothold and gave less vigorous forbs

Six weeks after burning of area at right, its deeply rooted grass is returning vigorously and green.

a chance to reestablish themselves. Meanwhile, by rotating the grazing areas of their bison and elk, the managers would try to duplicate random foraging habits of animals in the wild that, over the long haul, may have aided the prairie plant species.

But nothing can be done until Congress acts, and, as the legislative mill grinds slowly, the Flint Hills prairie endures as it always has, an island of space and solitude within an increasingly cramped and crowded world. The wildflowers still dance in rhythm to the wind, the snowy thunderheads still boil up out of the west. Except that every year, in a landscape so spare and open that a power line five miles away can be a jarring insult, there seem to be more transmission lines and more new houses, more oil storage tanks, more man-made reservoirs. Time will not stand still, not even here.

But time may now be on the side of the prairie and its advocates. For something new is in the wind, a new appreciation for what Walt Whitman once called "North America's characteristic landscape." The tallgrass prairie will never reclaim the corn belt, of course, but it is winning a more secure place in the hearts and minds of men. We are rediscovering something of value in the landscape we had all but forgotten. As Jim Wilson puts it, "there is a mysterious something about the native grasses—a power, a spirit, a mystique—that both stirs the soul and quiets it." More than the fecundity of its soil, more than the thousand-and-one utilitarian uses to which it has been put, this elusive something may be the prairie's most enduring legacy.

Even as conservation sentiment rises, virgin prairie is still put to plow, as was done here (background).

The contractor's bulldozer poses another threat to the prairie, as in a Kansas housing development.

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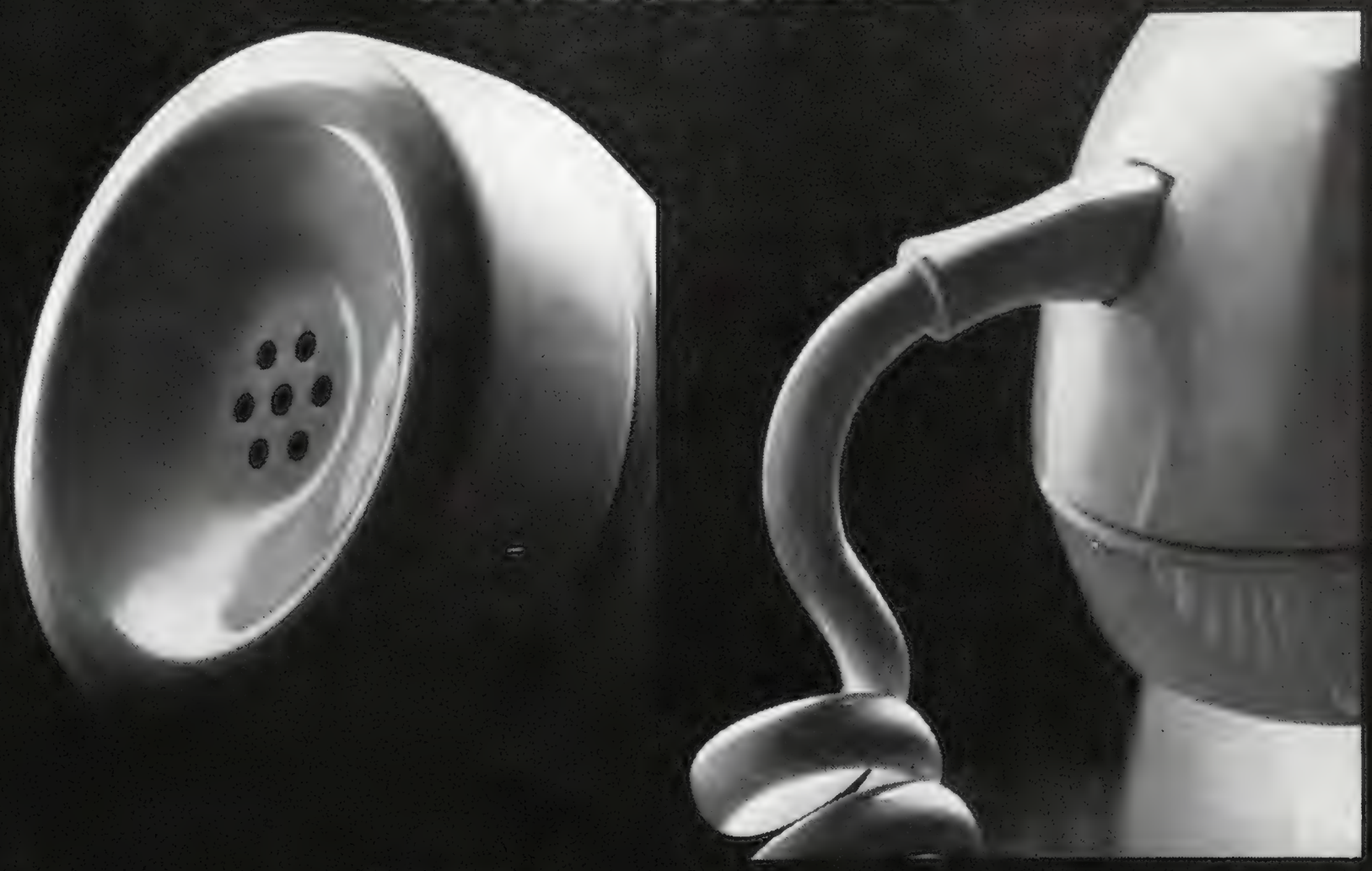

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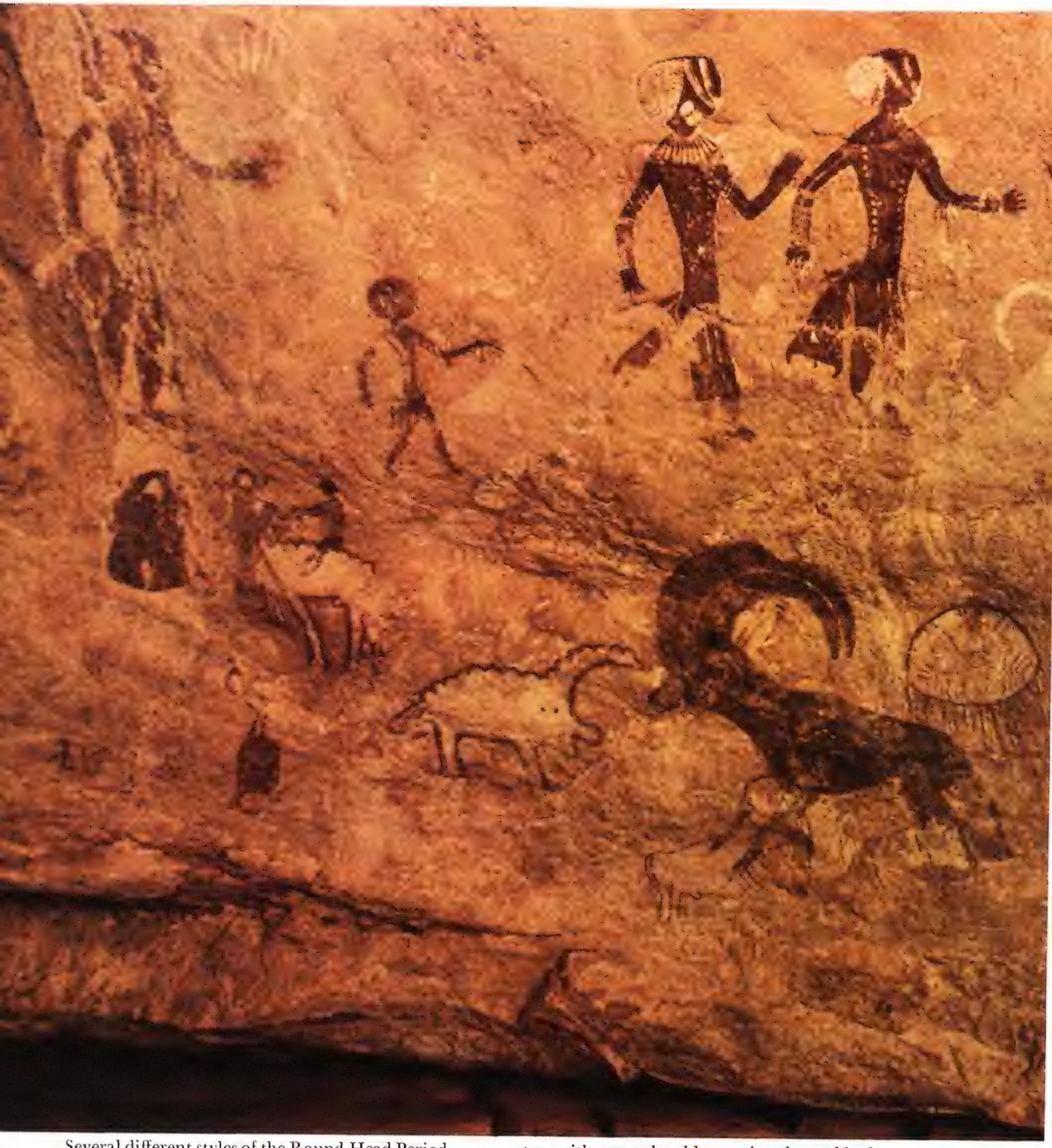

Several different styles of the Round-Head Period are represented in this cave at Tan Zoumiatak. The most sophisticated figures are the two at the top, with ornate headdresses, jewelry and body paint. The wild sheep at the center is of the same era, but the white ones at left are more recent.

Photographs by Loomis Dean

By Pierre Colombel

Old frescoes show Sahara once had pleasanter climate

Still-mysterious cave paintings of Tassili Plateau are evidence of rich neolithic culture in area that is now a barren waste

In the heart of the world's greatest desert (only slightly smaller than the whole of the United States) is an area known as the Tassili n'Ajjer, which means "plateau of rivers." That name evokes a time when the Sahara was less arid than it is today. For although it was a desert long before Man's arrival there, it has also known, during the long, dry centuries, several interludes of rainy weather. The most recent of these lasted more than 5,000 years, from the seventh to the second millennium B.C., and provided conditions in some places for the development of rich neolithic cultures.

The Tassili n'Ajjer, some 900 miles south of the Mediterranean in southeastern Algeria, is one such area. For millions of years the sand-laden wind, alternating with heavy rainfall, beat upon the rocks, digging out canyons, hollowing out shelters at the base of cliffs, and sometimes forming veritable natural cities of rock where people lived. These sites are full of the signs of human habitation, in the archaeological strata on the floors of the shelters as well as on their walls, where they take the form of drawings and paintings that are as remarkable as, but quite unlike, those of Altamira found in Spain and the Lascaux Caves in France.

None of this was known to Western scholars, however, until 1909, when a French army officer named Captain Cortier reported that he had seen petroglyphs in the region, including "the drawing of a bison." In the following years similar observations, from military personnel and geologists, drifted in. Then, in 1933,

The desert-bound Tassili Plateau can be reached only on foot from the oasis town of Djanet.

A Tuareg standing in a rock shelter at Sefar shows the scale of these caves and of the paintings on

one Lieutenant Brenans—on patrol in the Tassili n'Ajjer—discovered a remarkable collection of engravings and drawings which were far superior to any found up to that time. For the next seven years Brenans pursued his researches while on reconnaissance missions as head of a desert force. His freehand drawings of the frescoes he discovered showed animals no longer existing in the region—elephant, rhinoceros, hippopotamus, giraffe, oxen—as well as human figures, some of them larger than life-size with round, featureless heads.

A young French scholar-explorer, Henri Lhote, became interested in Brenans' drawings. But World War II intervened, and so it was not until 1952 that Lhote, collaborating with the late Abbé Breuil, published the first scholarly report on Brenans' findings. In 1956 he organized and led the first systematic attempt to study the rock paintings on the scene, an expedition to the Tassili that included among its members both artists and photographers. I participated in this project, as well as in subsequent ones through 1973.

Before reaching the Tassili Plateau one must stop at the oasis of Djanet, where cool springs water 30-to-40,000 date palms and permit the cultivation of wheat, fruit and vegetables. Here one hires camel drivers, camels, donkeys, and the indispensable guide who will navigate the stony mazes leading to the open-air museum of the Tassili.

After a short drive by Land Rover to the foot of the plateau, one gets out and walks—or climbs. Today the meager vegetation is confined to the wadis (dry watercourses) or to small areas around the few waterholes. It is all that remains of a once abundant flora. Excavations and test-trenches near the rock-shelter paintings have yielded charcoal and pollen which indicate that the vegetation in neolithic times was basically Mediterranean: cedar, Aleppo pine, holly oak, willow, cyprus and juniper. This suggests a degree of rainfall greater than the few tenths of a millimeter that now fall annually on the plateau—not to mention the long periods without any useful rain at all, such as has been the case for the past five years.

Pierre Colombel, an expert on Tassili, is on the staff of the Laboratory of Prehistory at the Centre National du Récherche Scientifique, *Paris.*

the walls. The large Round-Head Period figure in the center may be seen in more detail at right.

The "Great God" of Sefar, partially obscured by antelope, had some unknown religious significance.

Animals are better represented in the rock paintings than plants. Besides those already mentioned, one finds vivid images of the bubal (*Bubalus antiquus,* a now extinct buffalo), the horse antelope, the oryx, the wild ass and the dog-faced baboon. There are even fish, some of which one can still catch in pools near 'Iherir. Here, in the Iherir region, the last crocodile was killed in 1924. A living fossil of the Tassili, he was 2.02 meters long and is now in Algiers.

The rock paintings of the Tassili n'Ajjer have been divided by Henri Lhote into five major periods. Each represents a different ethnic group with its own culture, body types, costumes and even surrounding wildlife. They are:

(1) The Bubal Period (6000-4000 B.C.)

(2) The Round-Head Period (overlapping Periods 1 and 3)

(3) The Bovidian Period (4000-c. 2000 B.C.)

(4) The Horse Period (c. 1200-600 B.C.)

(5) The Camel Period (400 B.C.-)

Because of the great number of shelters where different styles overlap (as at Sefar, where there are 12 superimposed styles), it was then possible to establish a basic chronology of this relatively unknown period.

The shelters with decorations seem to have been chosen more with an eye to living conditions than to the suitability of the rock face for paintings. They are among those most favorable for making a camp: protected from wind and sun, near a watering place, and—for herders—providing shelter for their flocks. Thus these prehistoric peoples simply painted the walls of the caves they had chosen as their homes.

However, there are some paintings with magico-religious themes which are located in more out-of-the-way places—in "pigeonholes," isolated shelters, or in natural amphitheaters that could have been the scene of ceremonies or rituals. Frequently, similar motivations led different artists from different periods to the same location, where they painted their scenes without taking into account previous representations and use, whether religious or otherwise.

The Bubal Period consists solely of engravings. Frequent representations of the ancient bubal, along with humans, ostriches, lions and oxen, give a certain unity to this group of naturalistic engravings. Technically speaking, their execution shows a remarkable mastery

The "mask" style, last of the Round-Head Period, suggests a Negroid element in the population.

Two antelope at Sefar, crudely drawn in white, are from the "decadent" stage of Round-Head Period.

of line: a deep pricking or scratching process, followed by polishing of the contours and upper surfaces. These esthetically fine works from the Bubal Period are contemporary with the early Round-Head Period, although the only common denominator is the animals represented; the human figures seem to belong to a white racial type.

The Round-Head Period shows a succession of 15 different stages, indicating cultural and technical evolution. In all of them the human figures have the round heads characteristic of the group; realistic facial details are omitted, though often replaced by a geometric design. The earliest of these figures are small horned men, painted in purplish ocher, and wearing loincloths with one, two or three flaps. Later the figures become bigger and the scenes more animated, and then more than one color is introduced. These characteristics are evident in the group from Tan Zoumiatak (pp. 68-69), in which several levels have been superimposed.

Another important Round-Head style is that of the large white figures, outlined in purplish ocher, a

The Bovidians, most sophisticated of the artists, produced caricatured figures such as this one.

theme that Lhote termed the "Great God." Typical is the Great God of Sefar (pp. 70-71); it is evident that this is some sort of magico-religious scene, but its exact meaning is yet to be discovered.

The end of the Round-Head Period is marked by the so-called "mask" style (p. 72). These figures sometimes have a European look, but as a whole the bodies, postures and symbolic masks resembling those of black Africa seem to suggest that there was a Negroid population during that period.

The Bovidian Period marks the arrival of new ethnic groups possessing a different culture. Herders seem to have arrived from the northeast, in search of open pasture for their huge flocks (in the previous period there is no evidence of the domestication of cattle, or of the presence of sheep and goats). In the then favorable milieu of the Tassili they settled for more than 2,000 years. They were a white population of a Semitic type. Their physical and ethnic characteristics were comparable to those of today's Peul groups, nomads of the southern Sahara from the Sahel on down.

The art of the Bovidians is the high-water mark of the Tassili rock paintings—the physical beauty of the figures, the mastery of the paint medium, the intelligent composition of subject matter and the interplay of colors. The scene from Sefar shows the moving of an encampment (below). Two men armed with bows are surrounded by moving cattle, while two others—one of whom is holding a pot—are squatting on an ox (whose color has all but disappeared). On the right is a saluki hound, proving they had been domesticated by this time. Today the Tuaregs use salukis to guard their camps and herds, and for hunting. Tribal wars must have been common, as there are numerous scenes of combat. But there are also initiation rites, and even a few love scenes.

The continued presence of fauna depicted in the earlier paintings seems to indicate that the Tassili still had a moist climate with a plentiful water supply and rich vegetation. But at the beginning of the second millennium B.C., the land began to dry up noticeably and the herders moved south looking for more suitable pastures.

About 1200 B.C. a new wave of peoples arrived from

In this elegant scene from the Bovidian Period, herders have broken camp and are moving on, surrounded by their cattle. The dog (upper right) is a saluki, seen in the desert today.

the northeast, a white population which used chariots for transportation. This was the beginning of the Horse Period. It is probable that these people did not continue to use their chariots, which they had formerly employed for hunting and war, as the terrain of the Tassili region does not readily lend itself to wheeled vehicles. On the other hand, they are depicted riding horses, a form of transportation apparently in use until the end of the first millennium B.C. With the appearance of these riders, the costumes, weapons and painting style changed again. The fauna at this stage includes only the giraffe, ostrich, antelope and wild sheep. There are still some cattle and domesticated sheep and goats, but in much more limited numbers than previously seen.

The periods of drought were as difficult as they are today. The men dressed in long robes and capes, or wore short tunics gathered at the waist. The javelin, hand dagger and round shield have replaced the bow and arrow. The painter's palette is limited to red ocher, with details underlined in white or yellow. In the Horse Period the themes are usually long lines of human figures—meaning unknown—or family groups and scenes of hunting or war. Most probably it was at the end of this period that writing in the Tifinar alphabet begins to appear in some of the paintings (p. 75), but it is not entirely the same as the Tifinar used by the Tuaregs in the same region today.

Little by little, the horse was replaced by the camel, which gives its name to the final period of the rock frescoes and indicates the drying up of the region. The camel remains the main means of transportation in the desert today, if one leaves out the trucks and planes that are largely modern intrusions. The Tuaregs, descendants of the horse peoples, have left paintings in some shelters in the Tassili. But they are mere graffiti in red ocher or charcoal, signs of the impoverished existence and the difficulty of simple survival which are the lot of thousands of Tuaregs today. All they have left are the camel, a few meager goat herds and a budding tourism which attracts many admirers of prehistoric art to make the difficult journey to the caves of the Tassili—an art which brings before us remnants of a still largely undiscovered past.

Camels date from final period, when desert turned arid again toward beginning of Christian era.

Present-day caravan crosses Tassili, still using primitive bridles similar to those depicted above.

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Overriding its size and structural strength, huge camphorwood *torii* of Miyajima seems to float lightly on the Inland Sea. It marks the entrance to the island shrine of Itsukushima.

Color photographs and text
by George and Claire Louden

People and nature combine to make an embracing faith

Shinto, ancient religion of Japan, venerates the natural world and the spirits of ancestors in a constant cycle of renewal

In Shinto ritual, Emperor Hirohito plants seedlings in rice paddy within Palace grounds.

This fall the world's most prominent follower of Shinto plans to visit the United States. He is, of course, Emperor Hirohito of Japan (right, above), and his coming symbolizes the vast change in Japanese-American relations since December 1941.

Change is part of the character of Japan and certainly a feature of Shinto, the indigenous faith of the Japanese. For this combination of nature worship and ancestor worship that dates from the country's earliest beginnings evokes in its adherents a sense of their ancient roots—and their constant rejuvenation. State Shinto, misused by the ultranationalists of the late 1930s, encouraged attitudes that led to the attack on Pearl Harbor. But the same faith has since returned to its emphasis on peace, harmony and nature.

Ancient chronicles tell of Amaterasu-Omikami, the sun-goddess who founded the line of emperors—Hirohito is the 124th—and who became the guardian deity of the island nation. Her spirit is enshrined at Ise, the most tradition-bound spot in the country, and symbolized by an ancient and sacred mirror, said to be of polished bronze, although it is shrouded from sight at all times. She influences all that Japan was, is and hopes to be.

In 1973 the Grand Shrine of Ise was rededicated for the 60th time within the past 1,300 years. Every 20 years the perishable structures and treasures at Ise are renewed by building exact replicas. Carpenters with traditional hand tools and ancient techniques reproduce the buildings, *torii* (shrine gateways) and bridges. Cypress and cedar are left unpainted with no attempt to disguise the natural wood grain. Thatched roofs retain their texture. Rafters project high above to form those distinctive X-shaped horns called *chigi*.

Japanese craftsmen, some designated as "Living National Treasures" in recognition of their artistry, remake more than 2,000 sacred garments, musical instruments and ceremonial objects. Only the sacred mirror, cherished since the time of the first emperor, Jimmu, remains original. Reconstruction involves more than 20 ceremonies, spread over eight years and culminating with the removal of the sacred mirror from the old shrine to the newly constructed sanctuary. Covered in white cloth and shielded from view, the mirror is transported by priests wearing ceremonial robes. In ritually "pure" darkness they pass beneath the centuries-old trees on their lacquered-wood shoes, to the accompaniment of ancient ethereal music. Guests show respect by a ceremonial double clap of the hands and reverent bows.

Now the old buildings, their deep religious meaning gone, are open to visitors and later dismantled. The space becomes an alternate site for the next reconstruction, 20 years hence. Thus the old is perpetuated. Japanese revere this *symbolism* of antiquity almost as

Atop a department store in Tokyo, most populous of world's cities, is the haven of a Shinto shrine. Below, surrounded by snow but warmed by hot springs, bathing rite of purification is also a part of Shinto.

much as actual age. It satisfies their desire for permanence and gives continuity in an unstable world.

And yet, now that Japan is an industrial giant, traditional ways are challenged. Businessmen are preoccupied with money; the young embrace Western materialism. How important, then, is Shinto today?

One young Japanese at a religious festival casually responded, "Religion is not the reason we are here. This is just a custom that everyone follows from habit." The eminent Shinto scholar of Kokugakuin University in Tokyo, Dr. Sokyo Ono, put the modern indifference into focus: "Shinto has been taken as a matter of course by people for 2,000 years: Feelings passed from heart to heart, not separated from everyday living." Many Tokyoites will say they do not believe in Shinto. Yet, despite cold, wind, snow and bumper-to-bumper traffic, three million Japanese of all ages and professions crowd onto the grounds of Meiji Shrine every New Year's night to offer the "first prayers" for good fortune. This means someone from almost every household in Tokyo has an inclination to pay respect to the *kami*—the spirits or deities—of the shrine. Shinto is so ingrained in their lives they don't know they have it by that name. The faith is caught, not taught. "Don't say that you know Japan, until you have gained some knowledge of Shinto," Genchi Kato, a Shinto scholar, cautioned visitors. "It is the spiritual blood or bone" of the nation.

Shinto's influence flows through all levels of Japanese living. Department stores have small *Inari* (beneficent) shrines in garden settings high on their rooftops. Businessmen and company presidents go to

Most sacred site is at Ise, preserving spirit of sun goddess Amaterasu-Omikami, nation's guardian.

these oases of tranquility to give thanks and ask for continued prosperity. There is even a Shinto shrine on the roof of Tokyo's congested International Airport. A traffic light at a major intersection of bustling Tokyo was installed with Shinto ceremonies. Before either a home or a skyscraper is built, a Shinto priest purifies the site to "console" the land *kami*. At the closing of a business deal, merchants often clap their hands twice, symbolically calling the *kami* to witness. Air-conditioned taxis have, hanging near the driver, an *Omamori* safe-travel charm from a Shinto shrine.

Shinto is at the core of many contemporary customs such as the bath. At the time Western European society was substituting perfumes and cosmetics for washing, the *ofuro,* a bath, was a Japanese habit. Concern for cleanliness is genuinely Japanese, an outgrowth of ancient Shinto purification rites, *misogi-harai.* Dirt, be it of body or mind, is evil and disliked by the gods.

Americans hurriedly bathe before going out for an evening's entertainment. The Japanese go out for an evening of bathing; that is the entertainment. To bathe by oneself, confined to a closed windowless room, is considered lonely and sad. So from Japan's humblest to highest, taking a bath with others is one of life's most pleasurable enjoyments—a sensuous experience, that soaks away winter's chill and work's fatigue and allows meditation and friendly conversation. You wash with soap and rinse before going into the big bath, which you share, politely ignoring what is not to be seen. It is bad taste to hurry or to hide.

Japanese gift-giving, always with a respectful bow, is basic to Shinto, a carryover from shared offerings

At Yokote, in Japan's snow country, drifts are shaped into sheltering huts and nature becomes benign.

Shinto festivals include lanterns and children, whose gateway to life is through elements of their religion.

Soft snows of winter announce spirit of the season—each has its own—and is appropriately observed.

made at shrines. Similarly, drinking *sake* as a ceremonial marriage bond is an extension of offering it to Shinto deities as a symbol of rapport. Most weddings still take place in the presence of Shinto *kami*. No words or rings are necessary. But there must be three sips of *sake* from each of the same three cups; then a Shinto priest waves his streamer-wand over the couple to bless them.

Sumo wrestling, mentioned in legend, is still popular. The 300-pound wrestlers still observe Shinto customs. Much of Japan's drama and dance theater originated from *jinji-mai,* primitive dances performed as Shinto rituals. The ritualistic dance *kagura,* god music, is still performed.

Shinto in its earliest beginnings was not really a formal religion at all. It had no founder or sacred book, no system of moral teachings, no set day for weekly worship, no separate clergy or monastic asceticism, no graven images of gods. It was, rather, an all-inclusive way of living. Shinto's basic outlook is quite different from that of many religions—an optimistic, cheerful attitude of being born good. One is not hampered by original sin and the need for salvation. One is not filled with anxiety about suffering in order to earn rewards in a life after death. One does not give up the emotional enjoyment of living the present for an uncertain future. Shinto's fundamental concern is living fully with the here and now, in harmony with spiritual forces of the *kami* world, which is inherently good. Evil is brought by intruding *magatsubi* (evil) from the outside.

Ancient Japanese were awed by the sheer wonder of majestic mountains, by movements of moon and sun, by earthquakes and typhoon winds. They were grateful for the beauties and benefits of plants and trees. They endowed their natural surroundings with spirits and in time these were worshipped as deities or gods—some "800 myriads" of them—which is to say, countless.

Shinto's countless *kami* are felt everywhere and in everything: through the voices and movements of nature; the music of whispering winds, the sounds of restless tides, the hissing and bubbling of mineral springs, in moving mists and drifting clouds, in flights of birds and insects. Animals, plants, stones—everything is a potential abode of *kami.* To the Japanese, age-twisted trees are haunted and holy; they sense *kami* in an echo still vibrating in the air; in silence itself.

Nature worship eventually expanded to include ancestor worship. The presence of departed clan relatives lingered unseen and continued to be felt, sharing in the lives of the living. People of noble character and charisma took on hero status to become *kami* and thus honored. Each clan had its own distinctive deity, an *uji-gami,* and then, in time, the emperors came to be regarded as *kami,* living gods. Japanese continue to worship at a private *kami-dana* (home altar), bearing names of departed ancestors.

"By every shady wayside and in every ancient grove, on almost every hilltop and in the outskirts of every village, you may see while traveling through the Hondo country [Japan] some little Shinto shrine. . . ." These words, written 81 years ago by Yakumo Koizumi, better known as Lafcadio Hearn, are still true today. Long before national park reserves became popular, Japanese preserved their unusual beauty spots simply by virtue of Shinto's respect for nature and ancient shrines. Each setting was already sacred—a waterfall, a misty mountaintop, a moss-encrusted rock formation, a grove of stately cryptomeria trees, better

The time of the flowering cherry trees, when the short life of the blossoms bring sadness as well as joy.

Luxuriant wisteria blossoms frame the idyllic and ordered beauty of a Shinto garden in heart of Tokyo.

known as Japanese cedars. Shrines were added where Japanese sensed a special aura of *kami* presences.

Torii gateways cross the path leading to a shrine, which nestles almost hidden amid the serenity of towering trees. In appearance the *torii* recall simple Oriental calligraphy. A horizontal crossbeam pole rests on top of two upright columns. Originally it was made of natural logs; today it is often painted vibrant Chinese red. *Torii* separate the sacred from the outside world.

Walking through the *torii* prepares one for presenting oneself to the enshrined Shinto spirit. Stone lanterns, gifts of devout believers, line the path, a custom derived from lighting the way with small fires. A *shimenawa,* sacred rope of twisted rice straw with zigzag paper streamers, hangs over the shrine entrance.

It is unthinkable to enter a shrine physically dirty or impure in heart or mind. So at an ablution basin one uses the bamboo dipper to wash one's hands and rinse one's mouth in ritual purification. One leaves street shoes at the steps of the shrine, and removes hat and coat. To worship the *kami,* one pulls the tassel of the long rope which jangles the shrine bell. This dispels evil spirits, purifies and calms the mind. Then one tosses coins into the slatted offering chest and lowers one's head in silent prayer of praise and gratitude, bows twice and claps hands twice. Prayers focus on personal protection from misfortune. One expects the offerings to maintain harmony with nature's forces, for the right to life belongs to more than just Man.

Mount Fuji is, of course, a symbol of Shinto Japan. Of all the many mountains, dwelling places of *kami,* this is the highest, holiest and most celebrated. Inspiration from it seems endless because its appearance changes from morning to evening, from season to season. The graceful slopes appear to float phantomlike in moonlight, become red with the rising sun, pale to blue above the haze of evening. Shinto shrines surround Fuji's sacred slopes, dotting the shores of five picturesque lakes that mirror its snowy volcanic cone. A small Shinto shrine stands on the crater's rim. The Japanese say that Fuji-san has what Man needs but rarely shows, "a warm heart, with a clear, cool head."

Today's unsentimental Japanese scientist does not discard Shinto *kami.* A geologist researcher explained, "Science is searching for an understanding of natural phenomena, and *kami* is the quintessence of this unknown." A restless curiosity about the unknown is a Shinto legacy that helps make Japanese such good borrowers. They remain flexible enough to reach out when something new comes along. This eclecticism involves much more than mere copying. The Japanese have a genius for consciously selecting and then reshaping outside ideas to meet their own needs, to tie in with their own tastes and traditions. Thus, both Buddhism and Confucianism have had a very strong influence on the life of the Japanese, but mainly as reinterpreted and absorbed by their own Shinto culture.

What makes *Taro-san,* the Japanese John Doe, tick? Much of his unique Japanese-ness is inherited, inbred from the deep-rooted purity of his Shinto past. He traditionally thinks in terms of "we" rather than "me," placing importance on national individuality more than on personal individuality. He wants "to belong," so seeks his place within a group and feels cozy in a

crowd. There is a group solidarity behind consensus decisions. If he lacks the company of others, he still feels, everywhere, the presences of the Shinto *kami.*

He has a strong feeling of family, in school, place of work, community, in the country as a whole—a huge national family with the Emperor as father. The Japanese know who they are. They share an unbroken common heritage which dates back to prehistory and an ethnocentric national outlook peculiarly their own: the "oneness" of a homogeneous people. Even with today's internationalism, an invisible protective wall separates "We Japanese" from "those others."

Taro-san has a deep desire to be accepted and to avoid the shame of "losing face" by failing, or of making someone else lose face by causing him to fail. He prefers compromise to direct confrontation. An even deeper dimension is his inner self which few penetrate, the spiritual *kimochi.* This is an instinctive sensing of another's unspoken attitudes and thoughts, and derives from primitive Shinto tribal roots. Taro-san's antenna can pick up another person's *kimochi* and sense something good or bad without a word being exchanged. Intangibles can be more important than tangibles. One reason for the changeover from Japan's World War II militarism to pacifism was General MacArthur's gauging of the nation's *kimochi.* The people realized Shinto had been misused by militarists who led them into wars of expansion.

The first faith to affect the life of a Japanese is Shinto. From his birth he is placed under the protective care of a Shinto deity. His first venture into the community is to a Shinto shrine. As a child he watches huge cloth-balloon carp appear to swim in the sky above his rooftop, one for each boy in the family. Ambition and courage which carp display as they fight their way upstream is a fitting example to follow.

As a youth, he may help carry the *mikoshi,* a frequently gold-encrusted portable shrine held high on the shoulders of chanting young men who snake-dance through neighborhood streets. As a businessman, he may climb the wooded hillside through an archway of 10,000 vermillion *torii* to pay respect at an *Inari* shrine. The routine drudgery of the workaday world takes on a better balance with frequent festivals. These *matsuri* originated as rituals for expressing gratitude and ensuring blessings. When shrine drums sound, legends live again and old Shinto customs come alive.

As our world becomes more populated, one wonders, "Is bigger better?" There may be a lesson in the closely knit, self-disciplined life of the crowded Japanese. Japan is similar in size and setting to California—long, narrow, mountainous. If you imagine half the population of the United States crowded into California, you will get a feeling for the pressure of Japan's 110 millions. Thus the Japanese have become experts in the "little." They have learned simplicity, how to live in less space. They delight in a flower arrangement with one bud rather than a full bouquet. They develop *bonsai* dwarf trees, condense famous landscapes down to tray-size, make intimate gardens. Food terraces are small precious plots of land, manicured with care.

New industries were the crying need for war-torn Japan, and all efforts were focused on economic growth. They succeeded well. But this has been accomplished at the price of polluting nature. Within a man's lifetime, delightful aspects of the country are disappearing. Mount Fuji is just a hazy shadow glimpsed above the industrial smog. The famous cherry trees are deteriorating. Old *torii* gateways once part of tranquil pathways of huge trees now stand incongruously surrounded by concrete buildings, expressways, cars and too many people. Living centers are suffocating in their own waste.

Dr. Ono has said, "I want to cry out loudly and call attention to the people that nature is being destroyed. Shinto is a religion of trees and forests. What is a Shinto problem is a Japanese problem! Nature must be restored and respected. If we want to live in a world which is alive, the self-purifying capacity of nature must be preserved."

Since the Japanese have already done so much, they may, with their characteristic energy and sense of the proper relationship of things, achieve this.

This article is based on observations made by the Loudens during eight years in Japan. They have published books on Africa, India and Bali.

In a scene like a Japanese screen, humans become one with snow, trees and water in a Shinto garden.

Photographs by Dick Swanson

A kaleidoscope for children

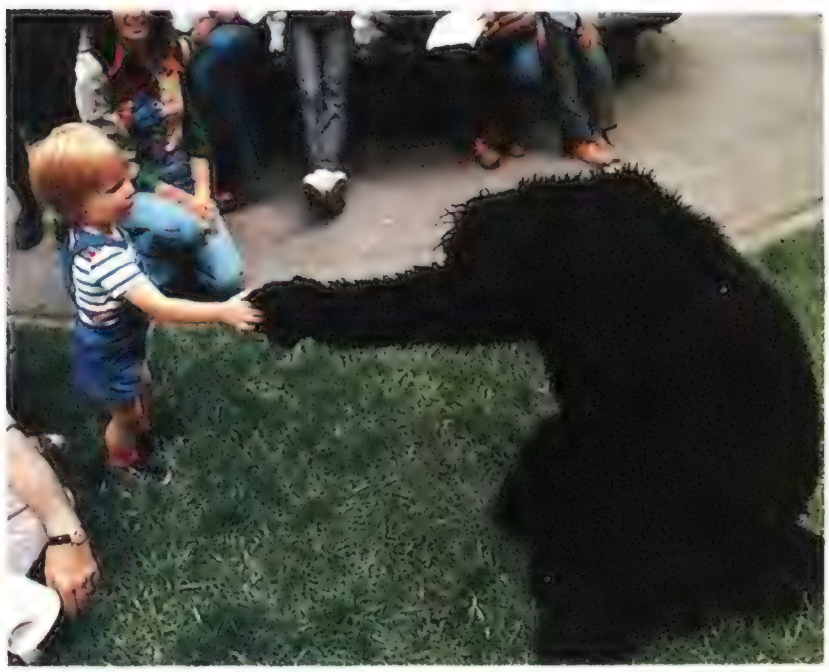
The inner courtyard provides the setting for a mime performance by Street 70 of Montgomery County.

National Collection of Fine Arts opens its doors to youngsters, offering them all kinds of artistic activities and games

Each spring for the last six years, the National Collection of Fine Arts has opened its museum doors to all youngsters in the Washington, D.C., area for one day of artistic fun. They are welcomed by animal-costumed people—a gorilla, giraffe and frog—and then led by a jazz quartet on a Pied Piper "line walk," with movements related to works of art in the museum.

In keeping with this year's theme, "Line, Color and Shape," artists shared their skills with the young visitors. Making their own works of art, the children added Styrofoam shapes to a huge white-on-white wall sculpture and touched a color environment with large papier-mâché characters. There were artists sketching animals and creating sculpture from giant blocks of wood. The children wove on their own small hand looms, made mock batik and learned to tie-dye with sheets and rubber bands. There was sand-painting and banner-making, a sculpt-in using discarded articles such as egg crates, plastic lids and paper towel rolls. And to put it all together, they decorated their own paper sacks to carry home their artworks.

The children are guided into the improvisational acting-out of their feelings in response to works of art, but they have their turn with their own videotape film capturing the colors and shapes of the day.



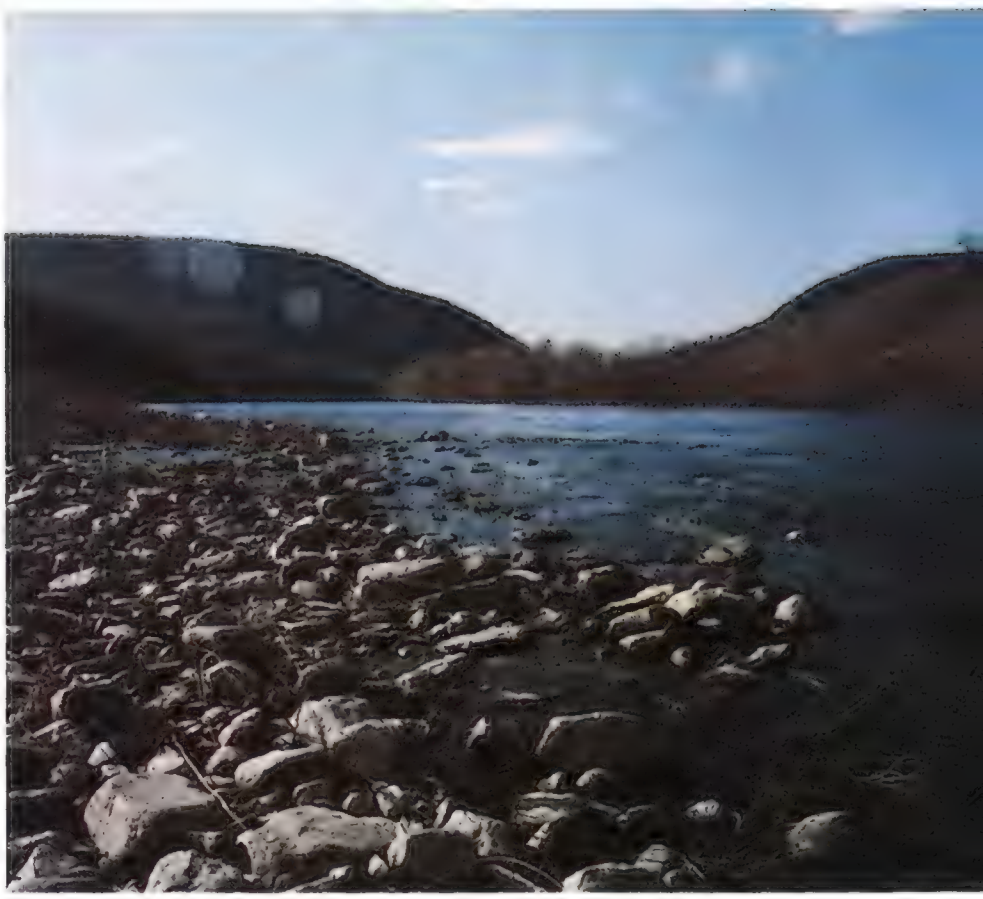
A gorilla-costumed adult welcomes child. Youngster (below) puts finishing touches on wall sculpture.

Young boy gazes at reflection of his own rainbow made simply from cardboard and colored cellophane.

By Michael Olmert

How you paint it depends purely on how you see it

From George Inness to Franz Kline, and right up to today, the entrancing Delaware Water Gap has attracted artists for more than a century



Even the train, in photograph of the Gap made a few weeks ago, still runs—but only weekly these days. Otherwise, scene differs little from the Inness (opposite), painted 102 years earlier.

From the very beginning, painters in America rambled about the new continent almost stunned by what they saw: its landscapes, its Indians, its plenty. To focus this romantic awe—and communicate it to their audience—a number of painters sought visual motifs. Essentially, these symbols were to speak for the land's obvious abundance and its ability to conjure up feelings of the sublime in Everyman.

Several features of the landscape were quickly seized upon: the Grand Canyon, Yosemite valleys and peaks, Niagara Falls, the Mississippi. For its part, the Hudson River occasioned not only a series of paintings but a whole generation of painters (and poets) as well.

Today, the art world is also discovering that the Delaware Water Gap was similarly attractive to the artist's eye. As its major summer show, Washington's Corcoran Gallery of Art—in conjunction with Artists for Environment—has assembled nearly 50 works by major 19th- and 20th-century American artists featuring the Gap and painted over a period of 150 years. Painters are still at it today.

The distinctive shape of the Gap itself began to form millions of years ago. Geologists now believe that the Gap was created as a result of erosion from the Delaware River which began to punch and wear its way through the Kittatinny mountain range that once stood much higher than it does today. The Delaware River is now the boundary between western New Jersey and Pennsylvania.

One of the early painters to make use of the Water Gap in his work was Edward Hicks (1780-1849), a Quaker preacher and artist whose works exhibit a simple delight in the facts of God's creation. Of the 60 surviving versions of his widely known *Peaceable Kingdom,* no fewer than 30 show the recognizable form of the Gap in their background. But God's truths are one thing to the preacher and geographer, and quite another to the artist. Thus, Hicks the artist felt no compunction about transporting one of the Water Gap's telltale curves to the horseshoe falls of his *The Falls of Niagara, 1825.*

George Inness (1825-1894), who painted 17 versions of his famous *Delaware Water Gap,* was the first landscape artist to draw atttention to the Gap as a purely compositional device. In his many small-scale paintings, which date from the middle 1860s, the Gap at times seems merely a shimmer in the background; in other paintings, it hovers in the middle distance, black and confident.

Inness was obviously at pains to capture the Gap in its many moods. If he was compelled to include a rainbow as a concession to his romantic instincts, he usually balanced that with a train puffing its way into Slateford, Pennsylvania. Even today, rainbows are a common occurrence at the Gap. But the trains, which run on the same roadbed they did 100 years ago, are less punctual.

Armed with photographs of Inness' work, today's art historian can clamber over the riverbank south of the Gap in search of the spots that Inness worked from.

The Brooklyn Museum

The search repays the effort. What is discovered is that while Inness remained faithful to the longer view, he usually had his own way with the foreground. He has the river drift away sharply to the right in order to have a foreground platform for anglers or cowherds, all of them apparently grateful spectators of the interplay between the Gap, the weather and the sunlight, and all of them painted participants of that special confluence of earth, water and land which is the Delaware Water Gap.

Another Water Gap painter who obviously knew the value of a single patch of bright light was the American landscapist and fantasist, Louis Eilshemius (1864-1941). His *Delaware Water Gap Village* (pp. 92-93) thus focuses on a partially sunlit roof—a blinding and energy-filled white hole in the picture's center. The Gap, meanwhile, presides over the scene from the background.

Other Eilshemius works in the show concentrate on the same village beneath the Gap (probably Portland, Pennsylvania). And in all of them, the village church steeple is structurally and thematically important. This fact alone should bring some attention to the show: For too long, Eilshemius has been merely billed as a grand eccentric and flamboyant sensationalist who at 77 died penniless in Bellevue Hospital's psychopathic ward. These landscapes seem to show another side of the hedonist.

As recently as 1958, Franz Kline (1910-1962), a towering figure in America's brilliant generation of abstract expressionists, also painted the Gap. His abstraction, *Delaware Gap*, large-scale (78 inches by 106 inches) and calligraphic though it is, turns out to be surprisingly easy to explicate. And a straightforward comparison (pp. 94-95) with Benjamin Henry Latrobe's *Delaware Water Gap* (1856), a drawing completed more than a century earlier, is the key to what Kline was up to. In both works, the same shapes, the same lights and darks compete for the viewer's attention. These two technical approaches to the Gap—Kline's distillate of reality and Latrobe's forthright realism—illuminate each other. Together, they show that the journey from representative art to abstraction is neither so one-way nor so abrupt as it is often pronounced to be.

Today, landscape painters are again returning to the Water Gap to celebrate its surprising survival. After all, it is not far from dead center in America's Northeast Corridor. With the not-so-minor objection that a four-lane superhighway, Interstate 80, now slithers through the Gap, not much has changed in the last century. The population of the area is small, and agriculture rather than industry is what supports the people. In fact, there may be less industry now than there was in the 17th century. The Dutch mined copper at Pahaquarry, only a few miles from the Gap, in 1664 and even built the earliest highway in the East,

Michael Olmert is a free-lance author and critic who writes about the social and physical sciences.

the Old Mine Road—still in use today—to take the ore up-river and across New York State to Esopus (nowadays Kingston). Obviously, the Dutch found the Hudson River a better bet for their shipments than the British-controlled Delaware. For more than 200 years, Dutch names like Van Campen and Rosenkrans dominated the records of the area, while the world raced ahead in New York and Philadelphia, each less than 100 miles away.

There are those who would like to keep it that way. The Department of the Interior, for one, has designated most of the area as the Delaware Water Gap National Recreation Area. The park includes 70,000 acres along the Delaware River, and although much of it is still in private hands (the park was authorized by Congress only in 1965), eventually most of it will be allocated to conservation and preservation activities. At one time, there was a great deal of support for a dam across the Delaware at Tocks Island (five miles above the Gap) to create a 12,000-acre lake—with all that would imply in terms of water-skiers and barbecue pits. In addition to what we know about the way dams can silt up and become useless in a distressingly short time, it is arguable whether today's economy will be able to support such a project.

By sponsoring Artists for Environment, the National Park Service is more than carrying out its job. AFE (also affiliated with the Union of Independent Colleges of Art) is, simply stated, on-the-job-training for landscape artists. Each semester, the school takes 10 to 12 of the most promising art students out of their city classrooms and offers them a chance to paint the environment at firsthand. The immediate advantage is that at AFE, almost cut off from city ways within the Delaware Water Gap Recreation Area, students come to their landscape canvases more as participants in the environment than as spectators of it. Instruction in-

Edward Hicks, visionary "naive" painter, was nevertheless sophisticated enough to move

the Gap into 30 of 60 surviving versions of his famous and fanciful *Peaceable Kingdom*.

The Brooklyn Museum, Dick S. Ramsay Fund

The Metropolitan Museum of Art, Arthur H. Hearn Fund, 1950

Landscape artist Paul Resika at work on the Walpack Bend of the Delaware River.

cludes ecology and nature studies, as well as an imaginative and technically inclusive art curriculum, and even such a practical matter as frame-making. Along with the AFE's regular instructors (Director Joel Corcos Levy, Roger Shepherd and Robert Kulicke), the students are treated to week-long visits by working landscape artists from the art world (Joe Fiore and Paul Resika have been recent visitors). The Park Service also sponsors artists-in-residence, who work with the students on a yearly basis. Watercolorist David Campbell is one of this year's residents. Joel Levy, who started AFE, was artist-in-residence in the park five years ago. Founding AFE, he confesses, was purely a defense mechanism to keep him at the Gap.

The key to successful landscape art is actually working in the field. The land has a personality as elusive and as defiant as any human's. Although few would seriously suggest doing a portrait from a photograph, the countryside has been belittled in this way. And the art of landscape painting has thus been reduced to mere reconstruction in the studio.

Partly as a reaction to three decades of studio abstraction, and partly in connection with the national concern for the earth and the environment, the art world is seeing a return to the land. More first-rate ar-

Delaware Water Gap Village by Louis Michel Eilshemius (1886). Although best known for his surreal luminescent floating nudes in shaded glade settings, this is another aspect of the artist.

tists are billing themselves as landscapists today than at any time since the last century. And 22 of their Water Gap works are hanging among earlier paintings in the Corcoran show.

This spring's visit to the Gap by Paul Resika (p. 93) was typical. When he arrived from his New York studio, he immediately backpacked his easel and paints two miles down to the edge of the Delaware. "If I'm here to help the students," he confessed, "I've got to try painting these scenes myself. Let's see what they're up against." The East had a late spring this year; because of it, the April woods were as gray as a mouse, or like a stand of so many feathers on the horizon. But as Resika set up his canvas—all the while with an eye to the steep hills along the water's edge—he was suddenly attracted by the faint blushes of red or pale green that the buds gave to the dormant sycamores in the distance.

"Those halos of color," he called them. "You have to latch on to a little thing like that to make a painting work. I'll say that this place is no landscape for a beginner. It's for accomplished painters." With that, there were some intense minutes scouring the distance for a motif, and a series of gestures to the landscape—as if the painter were signaling to the Spirit of the Woods that he'd found the key to unlock his visual secrets. Then Resika went to work, swiftly building up blotches of color in particular parts of his canvas. Next, he began adding details, at one point exclaiming how a single cloud on that brightly sunlit day had dramatically transformed the tone of a whole segment of the middle ground. The cloud had made those gray woods "as black as a buffalo," and Resika went on to document that change with his oils.

Resika himself is a large man who seems more like a wrestler with the environment than a simple recorder of its moods. At times, he throws his arms straight out at his sides, almost appealing to the land, or he paces back and forth in front of his canvas, singing. Often, he takes his painting off the easel and lays it on the ground, circling it like a buzzard to challenge the faithfulness of his vision. "See that one red roof over on that hillside? Look how it echoes all the faint reds in the trees. Now I've finally got something shakin' in this picture!"

All this enthusiasm is not lost on the students. Although they all had done landscapes before they came to AFE, they are now convinced of the necessity of painting nature *in situ*. Says one: "The colors are hard enough to get right when you're in the fields. You can forget about capturing them when you're back home. Have you looked outside? The colors in that grass drive me bananas!"

What is more important, the students have rediscovered that the seasons make profound changes in the way things look and live. In turn, this has strengthened their feelings about the environment and the impact their art can have. In the words of David Campbell: "Landscape painting is just like a folk music. It belongs to a particular spot on earth. To be good, it must reach into primeval and historical time, and make contact with nature and men. We can't underestimate the importance of landscape painting. Beyond making pictures, it aims to make a worthwhile home for ourselves and for others."

AFE is situated on a ridge overlooking the Walpack Bend of the Delaware, about 12 miles from the Gap

Maryland Historical Society

Benjamin Latrobe's drawing, *Delaware Water Gap* (1856) concentrates on skeletal framework of shapes and shades of land, air and water, as does, in its way, Franz Kline's *Delaware Gap* (1958).

(near where Inness painted his *Delaware Valley*). Its manse was the home of a group of White Russian emigrés who called their place "Salamovka," and in fact was the house in which Franz Kline lived in the mid-1950s while he worked on *Delaware Gap*. The emigrés topped off their new home with a cupola, the better to take advantage of the view down the river toward the Gap and undoubtedly also to put them in mind of other cupolas on other houses that had been left behind back in Russia.

Looking across this American valley today, there is only one visible sign of human encroachment—that in the form of a single clear-cut lane for the power lines. In winter it glows white with snow; in summer, light green—or straw-colored as the days wear on. It is the only straight line in the midst of a curving universe—mountains, rivers, streams. But all that will change in time. The power lines are being moved. And in about 20 years, when the cut is completely reforested, what will the art world make of all those landscapes with the puzzling bleached stripe down the side of a mountain in the distance?

"No Tivolis, Ternis, Mont Blancs, hackneyed and worn by the daily pencils of hundreds, but primeval forests and virgin lakes," was the way Hudson River painter Thomas Cole saw the American land in 1830. The question today is: Where is the land going? Surely, the wear and tear of daily penciling is no longer a threat.

As for the Gap itself, this collection of paintings and the Park Service's sponsorship of Artists for Environment and the Artists-in-Residence program will go far toward ensuring its continued protection and sensible use. These, together with an apparent resurgence of interest in landscape painting among serious artists, can help put us in touch again with what it feels like to be appreciative figures in an unspoiled landscape of trees, rocks and river.

The Hirshhorn Museum and Sculpture Garden, Smithsonian Institution

By James S. Trefil

New particles jolt established theories of ultimate matter

Unexpected results in two laboratories a continent apart have opened a new world of charm to high-energy physicists

New scientific discoveries usually involve things that will have an immediate impact on our lives—a new way of generating electrical power, for example, or a new way of treating a disease. But every once in a while something is found that is so new and so unexpected that scientists themselves don't really know what to make of it. The discovery a few months ago of a new kind of sub-nuclear particle was just such an event. It may mean the addition of a whole new family to the already bewildering taxonomy of elementary particles.

Most people probably think of physicists as a pretty sober group, but when something exciting happens in their field they can be as gossipy as the neighborhood coffee klatch. Rumors start to fly around the country, from one university and laboratory to the next, from one friend to the next. I was sitting in my office a few months ago when a colleague walked in and asked, "Have you heard about the new particle?"

"What new particle?"

It turned out that a friend of ours at Stanford had called over the weekend and told him that rumors were going around the laboratory of a new discovery. We thought for a while, and then realized that we had a friend who was normally at Stanford, but was visiting Princeton at the time. Maybe he had talked with the people who had actually done the experiment.

A few phone calls later, we had the story. Not only had a new particle been discovered at Stanford, but it had been seen in a completely independent experiment at Brookhaven National Laboratory, a continent away on Long Island. And someone else had heard somewhere that maybe more than one particle was involved—maybe there was a whole family of particles whose existence had never been suspected!

Like most other scientists, physicists believe that they know the general outline of their field of study pretty well. They may not know every particle that may ultimately be proved to exist, but at least they think they know what kinds of particles there are. Until now they have been able to place all particles in two classes: the "normal," which includes the proton and neutron, and the "strange," which live much longer than normal particles. Finding a whole new class of particles would be equivalent to a zoologist finding a new subclass of mammals, or a chemist finding an element which did not fit into the periodic table.

During the next few days, physicists around the United States kept the phone lines busy as more details about the new discoveries came to light. The group at Brookhaven, under the direction of Professor Samuel C. C. Ting of MIT, had been carrying out one of those seemingly routine experiments which are the backbone of science. The accelerator at Brookhaven is designed to take protons, the tiny positively charged particles which are one of the building blocks of the atomic nucleus, and accelerate them to almost the speed of light. They are then smashed against a small target made of beryllium, a light grayish metal. From the results of this collision, the MIT group hoped to learn something more about the basic forces which hold the nucleus together. They found more than they bargained for.

This technique of learning about the world, which physicists call a "scattering experiment," is a little like trying to learn about architecture by bombarding buildings with artillery shells and looking at the flying bricks coming from the explosion. We can use this analogy to understand what happened in the Brookhaven experiment. Suppose that we were counting the number of pieces coming from houses, and we wanted to know how much the chunks that were coming out weighed. We would then catch the flying pieces and weigh them, counting how many weighed one pound each, how many weighed one pound one ounce, and so on. Suppose we found that there were ten pieces weighing one pound, 11 weighing one ounce more, ten weighing one ounce more than that, and roughly ten in each one-ounce category all the way up to three pounds. Then we started to count the number weighing three pounds one ounce, confidently expecting to

A high-energy physicist himself, Dr. Trefil wrote an introduction to elementary particles in the August 1974 SMITHSONIAN.

get some number around ten, and discovered that there were 100 pieces at that weight. I think we would be justified in thinking that something different and unexpected was going on.

This is basically what happened at Brookhaven, except that instead of counting pieces of brick coming from a house, the experiments were counting the particles coming from the collision of the proton with the nuclei of the beryllium atoms. Everything was going along normally until the experimenters got around to counting the particles whose mass was equivalent to an energy of a little more than three billion volts. (Physicists conventionally measure the mass of particles in terms of the energy that would be released if they were completely transformed to energy. On this scale, the proton "weighs" one billion volts.) At three billion volts, the experimenters found 100 times more particles than there should have been. This meant there is a particle weighing about three billion volts, three times more than a proton.

In real life, the situation is a little more complicated (it usually is). The new particle actually lives for a very short time, and then "comes apart" (the technical term is "decays") into other, more conventional particles. What the experimenters saw was not actually the particle itself, then, but the debris of the decay of the particle. By measuring the speed and angles of the pieces of debris resulting from the decay, the experimenters deduced that they must have come from a particle that lived for a short time, and they were able to calculate its mass. If you will recall that the particle itself is part of the debris of the original collision, you will get some idea of how complicated the chain of reasoning is that led from the experimental data to the inference of the existence of the particle. It had not been seen before because no one had looked with

Elementary particles are constantly transformed from matter into energy, and then back again.

Illustrations by Jan Adkins

enough precision at the right decay products at the right mass in the right original interaction to see it.

Creation of a particle is not easy to visualize. In our normal experience, the mass of an object does not change from one minute to the next. A tennis ball will always weigh the same, whether it is sitting on the table or being bounced around a court. In the world of the nucleus, however, this clean distinction does not exist. Energy and mass are constantly being converted back and forth into each other. The nucleus of an atom is not a static, stationary object, but a sea of different kinds of elementary particles which are constantly being created from energy to exist for a short time, and then reconverted to energy again, possibly to reappear later as yet another particle.

For the last 30 years, one of the major goals of physics has been to try to understand these fleeting things we call elementary particles, and to understand their role in holding together the nucleus of the atom. We believe that they are involved in the dynamic structure of every nucleus in the universe. Up until last fall, we also believed that we knew at least what kinds of particles there were, even if we didn't understand exactly how they interacted with each other. The appearance of a totally new kind of particle was therefore an event of major importance.

The experimenters were faced with a classic dilemma. Should they announce their results immediately, thereby "scooping" the scientific world, but taking a chance that they might be wrong, or should they go through the time-consuming process of checking and double-checking the result, taking the chance that someone else might make and announce the discovery first?

Let's go back to our analogy of the artillery shells and the bricks to get a better understanding of the problem. Given the result that we were talking about there, one of the first things we would do would be to check the scale we were using to weigh the pieces of brick, just to be certain it wasn't going haywire even in the case of one weight alone. It's easy enough to check a scale, but a high-energy physics experiment uses a "scale" with thousands of pieces, run by a complicated electronic system and analyzed by equally complicated computer programs. Finding a bug in a big system like that is not easy.

The whole problem was made worse by the fact that the speeding protons can make particles by processes other than collisions with the beryllium. It would be as if there were a brick factory located next to the house we were shooting at. We would have to be careful that the pieces we were counting actually came from the house, and not the brickyard. Physicists usually refer to the latter type of bricks as "background," and have developed sophisticated techniques to separate the background from the useful information in an experiment. But there is always the chance of another bug.

What to do? Every working scientist knows of horrible examples of men who have announced exciting new results, only to find that their equipment was malfunctioning or their computer programs were wrong. On the other hand, there are horrible examples of just the opposite—men who have obtained results and sat on them for so long that others have published them first.

During the months of summer and early fall, the laborious process of check, double-check, and triple-check got under way at Brookhaven.

Meanwhile, 3,000 miles away at the Stanford Linear Accelerator Center (SLAC), in a totally unrelated experiment, a sequence of events was taking place that bore an uncanny resemblance to what was happening at Brookhaven. A group led by Professor Burton Richter (whose brother devised the famous Richter scale for earthquakes) was performing an experiment on a device called the Stanford Positron Electron Accumulation Ring (SPEAR).

To understand how this experiment worked, we have to understand one of the

Brookhaven accelerator slings protons at almost the speed of light against stationary metal targets.

basic facts of life for elementary particles: For every type of particle that exists in the world, it is possible to create an antiparticle. For example, we know that there is a particle which we call the electron, which spends most of its life placidly circling the nucleus of the atom. When it is taken from the atom and pushed through a wire, it is called an electric current, and we use it to heat our homes and cook our food. The electron is a familiar thing in our lives, even if we are not aware of it.

The antiparticle of the electron is called the positron. It is just as heavy as the electron but, where the electron has a negative electrical charge, the positron has a positive charge. If an "electrical current" of positrons were made, it would flow from the negative side of a battery to the positive—just the opposite of normal.

It is very unlikely that such a current of positrons could be made, however. When matter and antimatter (for example, a positron and an electron) come together, the result is the most powerful explosion known in nature. Both the particle and the antiparticle disappear in a burst of energy. When a particle and an antiparticle are converted to energy, we call the process annihilation. The conversion of energy to a particle and an antiparticle is called pair creation.

The SPEAR machine works like this:

First, ordinary electrons are accelerated up to an energy of several billion volts and fed into a ringlike circular tunnel where they keep circulating. Then positrons are accelerated to the same energy and put into the ring, where they, too, are kept moving. The electrons and positrons circulate in the ring in opposite directions, so that if things are arranged properly, the two kinds of particles can be brought together in head-on collisions. When this happens, annihilation can occur, and tremendous amounts of energy are released. By studying the particles into which this energy is eventually converted, physicists try to get another insight into particle behavior.

Actually, the design of the Stanford experiment was not so different in principle from the Brookhaven experiment. It, too, was designed to count the number of particles coming out at a given mass. The main difference between the two was in the *way* the outcoming particles were created. And, without knowing anything about what was happening at Brookhaven, the Stanford group found that there were many more particles at a little over three billion volts than there should have been. So, through the early fall, we had a situation in which two separate experimental groups were checking their apparatus and trying to find bugs in their computer programs.

By the weekend of November 9-10, the group at Stanford had convinced themselves that their equipment was accurate and what they were measuring was real. They took over the machine for the weekend, and went on a particle hunting expedition. Knowing what to look for made things a lot easier, and by Sunday evening they were convinced that they had incontrovertible evidence for a new kind of particle.

By one of those happy coincidences that occur occasionally in science, a meeting of an advisory committee was scheduled at SLAC for the Monday following the discovery, and one of the members of that committee was Sam Ting. By the time he and the Stanford group had finished comparing notes, no doubt whatsoever remained about the new particle. The two groups agreed on everything about it, including its mass. The only bone of contention was the name. While the "West Coast name" of the new particle was the psi, the "East Coast name" was the J. (The SLAC group chose the name psi because the decay products fly off along tracks that closely resemble the Greek letter Ψ. At Brookhaven the name J was chosen because the new particle has strong rotational momentum, and J is the traditional symbol for rotational momentum in equations; also the letter J is nearly identical to the Chinese character for Ting, the name of the professor who led the Brookhaven discovery.)

A special seminar was held to present these results to the physicists at SLAC, and the word began to spread. By the time the results appeared in a professional journal on December 2, laboratories in Europe had already learned of the new particle and had been able to repeat the experiment and confirm the Brookhaven-SLAC results. The physics grapevine was working well.

The new particle was clearly not just another "normal" elementary particle. It is somewhat heavy on the scale of "normal" particles—its mass of 3.1 billion volts makes it a little more than three times heavier than the proton and neutron.

The heavy vector boson has proved entirely too tough for the present generation of accelerators to capture.

The personification of a strange particle might be an eccentric scientist who lives in a world of his own.

Much more importantly, this particle lives for about one hundred millionth of a trillionth of a second. While this may seem pretty short on our human scale of time, it is more than 1,000 times longer than the lifetime of "normal" elementary particles. Finally, a few weeks after the announcement of the psi, the Stanford group found another particle just like it,

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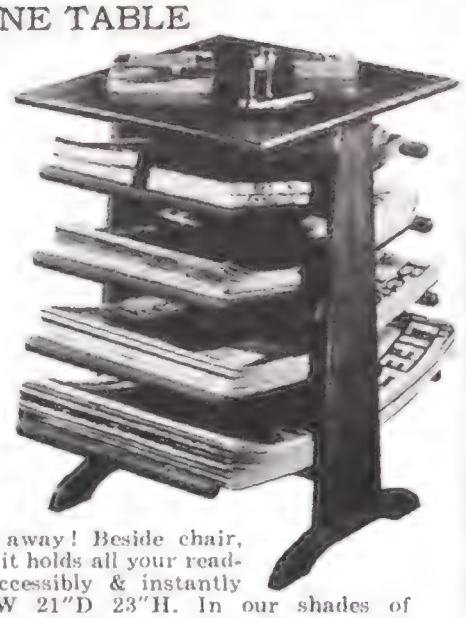

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but slightly heavier. The psi prime, as it was called, weighed in at 3.7 billion volts.

What does it mean? In situations like this, the first thing that physicists do is to look around at the available theories and see if any of them might, in the course of explaining the elementary particles and bringing them into some kind of order, have predicted such a particle. Two candidates immediately sprang to mind.

The first candidate goes by the formidable name of "heavy vector boson" (named after the late S.N. Bose, an Indian physicist). This particle is supposed to be intimately involved in the processes by which atomic nuclei decay and create radioactivity. Its existence has been suspected for a long time, and Harvard physicist Steven Weinberg has recently made theoretical estimates of its properties. Unfortunately, the particle is expected to be at least 15 times as heavy as the ones which were detected, so it is pretty unlikely that the psi will turn out to be involved in radioactive decay.

The second candidate was a type of particle which had been suggested by a number of physicists because, if it existed, it might explain some of the baffling regularities that we see among the elementary particles. It is supposed to be heavy (although no one is sure exactly *how* heavy), and long-lived (on the scale of elementary particles). It is called a "charmed particle." Physicists seem to delight in dreaming up fanciful names for new phenomena in nature, and this is no exception. Charm is a simple name for a complex mathematical property that has no counterpart in the world we see.

If it should turn out that the psi is indeed an example of a charmed particle, then we would have an entirely new class of objects inhabiting the nuclear world and playing a role in the structure of matter. We know that elementary particles can be arranged in hierarchies. For example, we know about the proton and neutron, the main building blocks of the atomic nucleus. There is a whole family of other particles associated with them, each heavier than the proton but decaying quickly into a set of final particles that ultimately will include the proton.

Very early in the history of elementary particle physics, another class of particle was discovered. This also was a large family, with every member heavier than the proton. The lightest members were called the lambda and sigma particles.

The charm particle is long-lived. We may have discovered first one in the psi.

Heavier members of the family could decay quickly to the lambda or sigma, which then decayed slowly into a proton. The slow decay was totally unexpected and this new family was given the generic name "strange particles." At the present time, we have firm evidence for just these two general classes of particles: the strange and the nonstrange or normal.

The suggestion that charmed particles exist is really a suggestion that we have seen only a part of the total picture. It suggests that there is an entire new class of particles, mirroring those we already know about, but still heavier. In this scheme, the psi would be the lowest member of the nonstrange charmed family, and there would presumably be other, still heavier members that would decay to the psi particle, which would then decay into normal particles. If this idea proves correct, then there ought to be a particle that is both strange and charmed.

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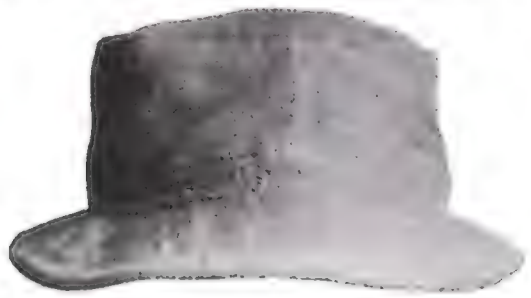

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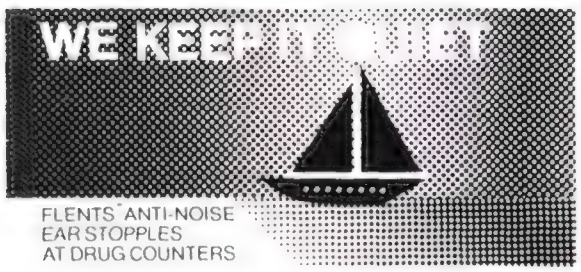

Actually, most people who believe that charm is the correct explanation of the new particles also believe that what we are detecting now is not a charmed particle itself, but a charmed particle and its antiparticle. These two objects are thought to be circling around each other. The charmed particle and its antiparticle spiral in and collide with each other, producing exactly the same type of annihilation event that we talked about for electrons and positrons. In this scheme, the two psi particles that we have detected so far are each a charged particle and its antiparticle. The lifetime of the psi particle is determined by how far apart the charmed particle and its antiparticle are and how fast they come together.

So two searches are going on now. The first is experimental, and involves gathering as much new data on the new particles as we can. The second is theoretical, and involves finding new ways to explain the data as it becomes available.

It is possible—even likely—that the first thoughts as to the nature of the new particles will prove incorrect, and will be superseded by more logical ideas. But whether our first guesses are right or wrong, we can be reasonably certain that we will someday understand the psi. What will it mean? To some extent, the answer depends on what the psi turns out to be. It might be an isolated curiosity that has no real bearing on the rest of the world: a sort of a duck-billed platypus among more useful particles. On the other hand, scientists have been trying for millennia to understand the ultimate structure and workings of the physical world.

This century has seen the discovery of the atomic nucleus and the particles that live out their fleeting existences in it. We are tantalizingly close to answers to questions first asked by Greek philosophers before the Golden Age of Athens. I think that there is a hope in the minds of physicists—seldom expressed publicly—that a new discovery like the psi will be the missing link, the last piece of the puzzle, that will lead us to a new understanding of the way the world works.

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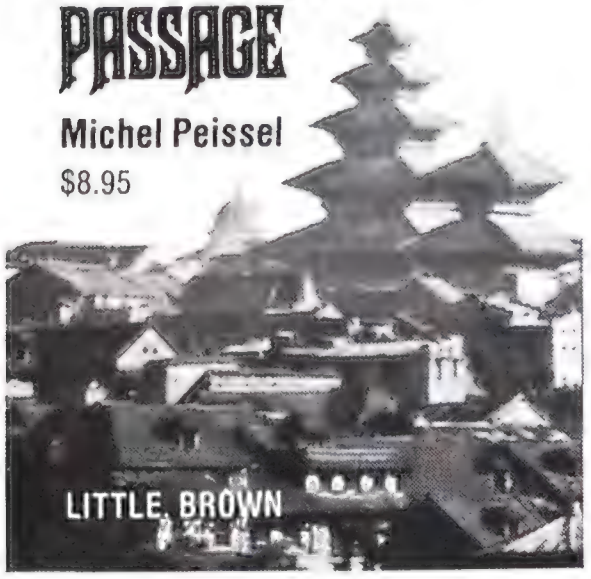

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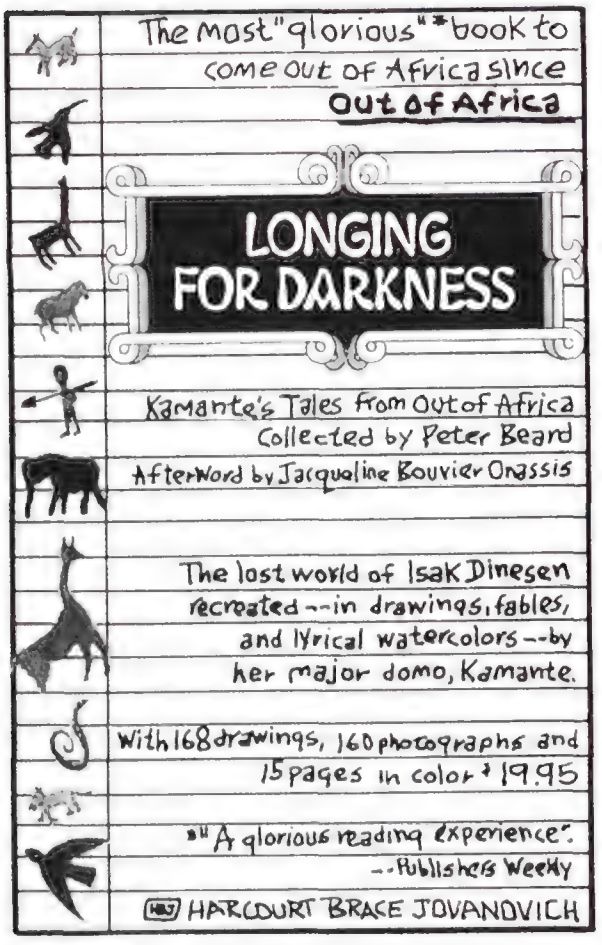
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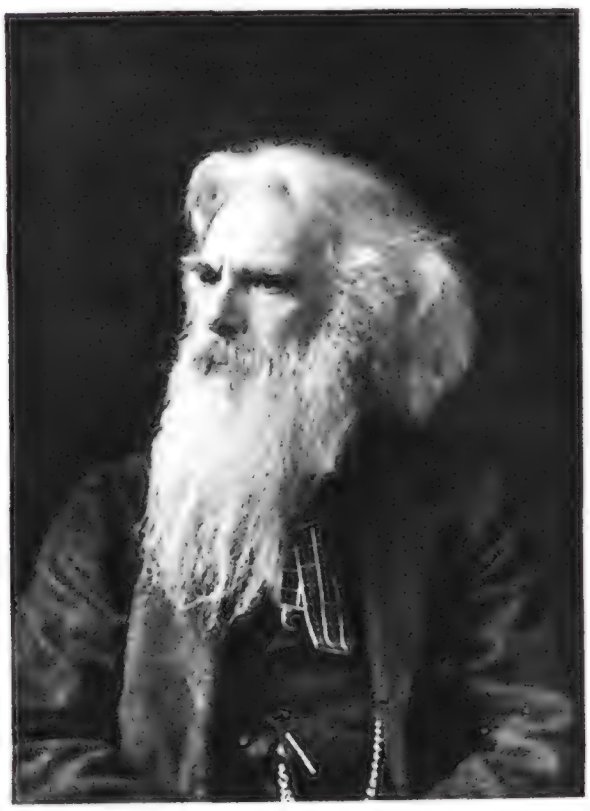
Book reviews

Eadweard Muybridge:
The Father of the Motion Picture
Gordon Hendricks
(Grossman Publishers, $25)

"But instead of talking art I will tell you what is going on in photography," wrote a student of American painter Thomas Eakins. His letter describes the experimental, sequential "motion" photographs that an Englishman with the improbable, self-created name of Eadweard Muybridge had begun to make for the University of Pennsylvania. The report on these experiments, published in 1887 under the title *Animal Locomotion, The Muybridge Work at the University of Pennsylvania,* has become one of the most influential and profound works of art created during the 19th century.



Muybridge at 65. From the book.

This excellent biography is essential for anyone interested in Muybridge's accomplishment. The author has a controlled grasp of his graphic subject, building on and extending the work of earlier researchers—notably upon the superb exhibition directed by Anita V. Mozley at Stanford University in 1972. There are many helpful surprises in this carefully researched book, but the central surprise is the wonderful life of Eadweard Muybridge himself.

Born Edward James Muggeridge in 1830, son of a grain merchant, Muybridge emigrated to America in 1852 and eventually made his way to California, where he became a bookseller. Although no one knows exactly how, by the mid-1860s Muybridge had become the best photographer in San Francisco. Working under the name "Helios," he photographed the California coast, the Alaskan Territory and Yosemite Valley. At a time of westward expansion, Muybridge made a good living supplying the curious with images of the scenic West. But the millionaire railroad tycoon and former Governor of California, Leland Stanford, wrenched Muybridge from his comfortable career as a photographer of "artistic" landscapes by giving him the means to become an artist of breathtaking originality.

To prove his theory that at some point in a horse's stride all four of its feet are bunched beneath its belly, free of the earth, Stanford commissioned Muybridge to photograph his great trotter Occident in motion. The author includes an account of the mechanics of Muybridge's 12 cameras (later increased to 24) which were electrically triggered as the wheels of the sulky contacted wires buried beneath the track. Begun in 1872, the project proved Stanford's point and was triumphantly published in 1881 as *The Attitudes of Animals in Motion,* the same year that Muybridge began his swing through America and Europe on a speaking tour lasting a year and a half. His vastly popular lectures were illustrated with projections of his photographs which, when viewed in rapid succession, caused the audience to experience the illusion of physical movement. These projected "motion pictures" were first shown in Stanford's living room in the fall of 1879, making Muybridge the foremost contender for the title, "father of the motion picture."

The author suggests that Thomas Eakins (whose passionate interest in Muybridge's work inspired direct imitation of it) was responsible for Muybridge's coming to Philadelphia in 1884 to begin work on what was to become his magnum opus, *Animal Locomotion*. For this project the Stanford techniques were adapted to record human and animal movements of every conceivable kind and, in the 781 collotype plates distilled from as many as 30,000 photographs, one sees horses gallop, athletes wrestle and, gloriously, birds fly. It is this in Muybridge's work that has appealed to artists from the French Academic painter Jean Louis Ernest Meissonier (1815-1891) to the contemporary American artist and filmmaker Nancy Graves (born in 1940). Truth is to be found in gesture, not in anecdote, and these gesturing bodies, most especially unadorned human bodies, are beautiful. Perhaps the most pertinent illustration in this well-illustrated book is the reproduction of Muybridge's plate 536 of the University of Pennsylvania series. The sensuous hands of Thomas Eakins are seen in 24 separate "frames" which record a strangely satisfying gesture. His left hand lifts a pencil from the table, passes it to his right hand and, with the simplicity and restraint that characterize much current art, places the pencil's point on a sheet of paper in preparation to draw.

—Dennis Longwell
Assistant Curator of Photography
Museum of Modern Art, New York

Human Engineering:
The Body Re-examined
John Lenihan
(George Braziller, $7.95)

To liven up a dinner party or stop it dead, try this: "Do you know how the Emperor Vespasian paid for the public toilets he installed in the streets of Rome? He collected the urine and sold it to the laundrymen." (In the days before soap, the ammonia content of urine made it useful in laundering. Some Eskimos still use it.)

Those who accept this book's invitation into the mind of John Lenihan will find themselves not only greatly enriched by information and stimulation, but also fascinated by little nuggets scattered through the work. Some examples:

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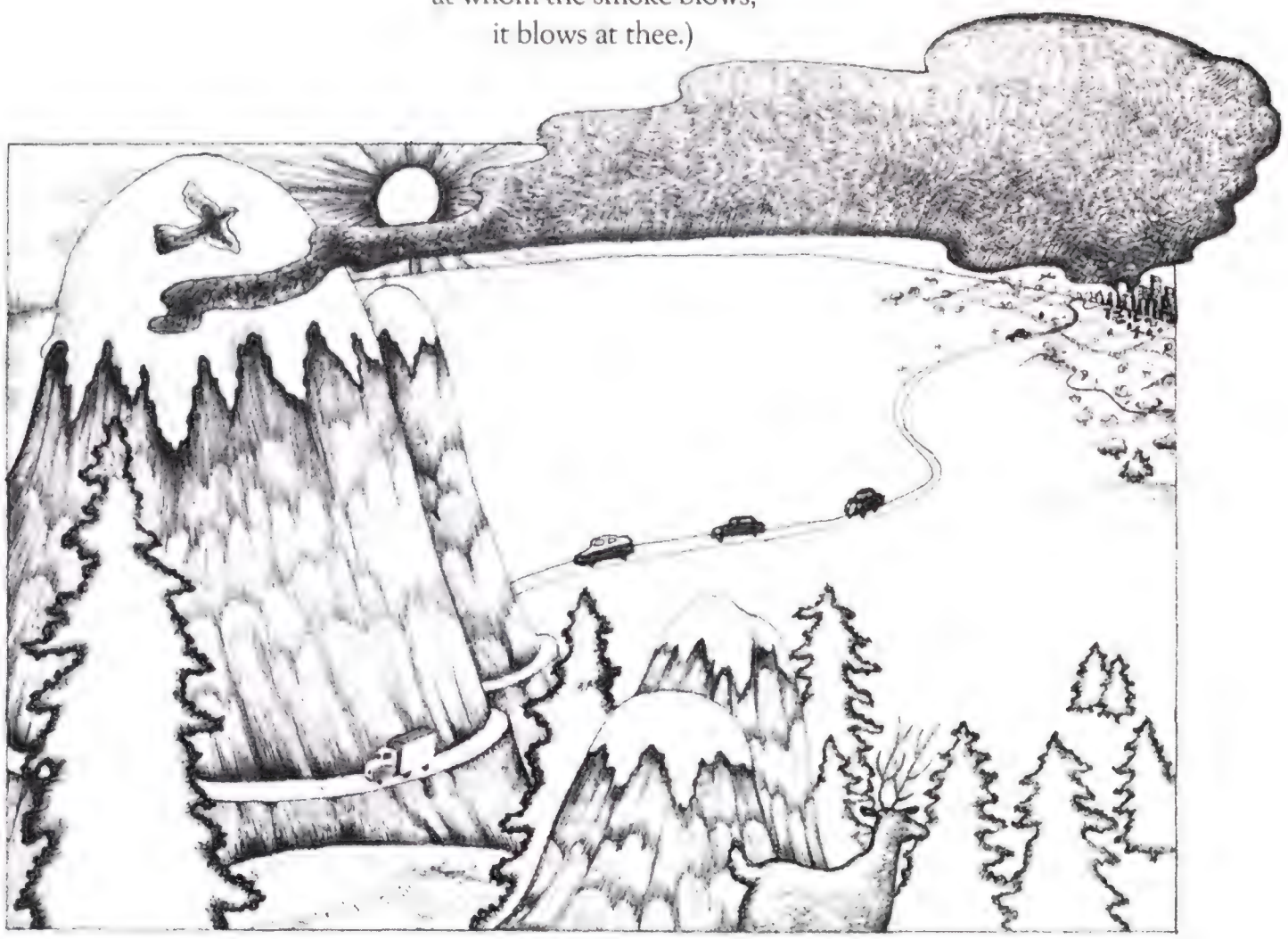

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Then what can we do to keep our rural air clean? We can retain and enforce the non-degradation provision of the 1970 Clean Air Act. That law is expiring. Clean air friends in the Congress want to renew its effective provisions. And naturally, the polluters are opposing them.

Men like Senator Muskie and Representative Rogers do not want to permit industries and utilities to flee the city and take their pollution to the country. Instead they would require that pollutants be removed at the smokestack, with the scrubbers which the National Academy of Sciences has certified as commercially feasible. But utilities want a 10-year delay.

Nor do they want to allow Detroit to keep stalling on car exhausts. Rather, they would keep us on schedule to reduce key emissions by 1978 to levels which will give us clean city air in the 1980's. But, Detroit wants a five-year delay.

Studies by the Environmental Protection Agency and the National Academy of Sciences show that the present timetable is practical, will create jobs, and allow the President's 40% auto fuel economy goals to be met by 1980.

So do not send to know at whom the smoke blows. Send a letter to Washington. Send it to your Senators (Senate Office Building, Washington, D.C. 20510) and your Congressman (House Office Building, Washington, D.C. 20515). Urge them to join the Congressional friends of clean air in their effort to improve, not weaken, the Clean Air Act of 1970. Ask them to keep the Clean Air Act intact.

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Astigmatism probably had nothing to do with the elongation of the figures in El Greco's paintings.

Early radiologists couldn't stand boiled eggs. Scrambled, poached or fried, O.K.—but not boiled. Reason: X-ray leakage from primitive equipment destroyed too much of the outer skin of their fingertips, making them too heat-sensitive to handle a boiled egg.

People who have had the eye lens removed by cataract surgery can see quite well in ultraviolet light.

Man is unlikely ever to produce a real-life Tarzan and there will never be an ape Rembrandt. Reason: the ape has a much longer forearm, which is very efficient for swinging through trees, but makes the delicate control of a paint brush impossible.

Lest these items give the impression that Professor Lenihan's book is merely a collection of trivia, be assured that it is very far from that. It is a serious attempt to examine the human body and to increase our understanding of it, using all of the insights and intellectual equipment of today's engineers.

The blood, for example, is studied, not merely as a hydraulic system, but as a distributor of food and oxygen, a collector of wastes for disposal, a defensive force against infection, a bodily thermostat and a circuit of pipes that are self-sealing when punctured and that leak in just the ways and amounts that the body requires. Other major systems and functions of the body are similarly studied, except for one—reproduction, for which the engineers have no model. (Not even the most ingenious airplane designer can build a six-inch miniature and then feed it until it grows into a 747.)

"The bioengineer uses the ideas and techniques of engineering in two ways," says Professor Lenihan. "The first is to describe and, where possible, to explain the structure and activity of the body in normal health." In that aim, Lenihan succeeds beautifully. One does not have to be a scientific professional to gain increased understanding and enjoyment from his book. There is no jargon in it. He writes with elegance—the book is a model of lucidity and precision.

The second major responsibility of the bioengineer is to "help to design spare parts or other devices to support the quality of life when it is impaired by accident or disease." Much has been done in this

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direction with the development of such devices as heart-lung machines, pacemakers and artificial joints, but Lenihan, (Professor of Clinical Physics, University of Glasgow) believes that a great deal more could be done. "Technology is not keeping up with the progress of medicine. Unless more of the world's ablest engineers and scientists are brought into the clinical battle, increasing numbers of people will be condemned to mere medicated survival."

—*Jay Nelson Tuck*
Consultant and free-lance writer
specializing in health care

Feather Fashions and Bird Preservation: A Study in Nature Protection
Robin W. Doughty
(University of California Press, $10.95)

This is the story of the world's first widespread conservation movement, the attempt to put an end to the enormous demand around the turn of the century for bird feathers to be used in trimming women's hats. Until it was halted, this fashion craze endangered the survival of countless bird species around the world.

The account of the carnage contains staggering, almost unbelievable figures; more than 200 million birds were killed for their feathers each year at the beginning of the 20th century, when this fashion trend had reached a peak. No species was exempt from this exploitation, which utilized, and was wiping out, birds of paradise, swans, swallows, doves, storks, terns, parrots, parakeets, peacocks, ostriches, herons, egrets, pelicans, roseate spoonbills and many others, even albatross and "robin redbreasts." As a result of this unrestricted slaughter, plumed birds in Florida and Louisiana, such as great white herons and roseate spoonbills, were virtually eliminated from most areas, and remain to this day rare or endangered. The demand for feathers, mainly in the United States and England, stimulated the killing of birds in New Guinea, India, Indonesia, China, South America and elsewhere around the world.

The earliest efforts to curtail the slaughter were largely unsuccessful. In England, the millinery industry held up legislation against such trade for at least 12 years, until a weak, loophole-ridden plumage bill passed in 1921. Then, as now, laws were enacted at the urging of conservationists not because they were able to convince legislators to protect animals for their own sake, but rather because it was in Man's interest to do so. When legislation was passed in England in 1869 to stop the massive slaughter of seabirds, it was mainly done because of arguments that the birds were useful to Man: Seabirds were valuable in devouring harmful insects, in helping fishermen find schools of fish, and in aiding seamen, by their calls, to steer clear of shoals and cliffs in foggy weather. (Unfortunately, the author tells us almost nothing about how these laws helped bring about the recovery of the bird populations they were designed to protect.)

In the fashion of the time.

In this carefully researched, extensively documented book (the bibliography alone runs to 15 pages of published and unpublished sources), there are many lessons to be learned, for it contains many parallels to the present situation. The author's account of the alliance of the millinery and scientific interests to defend the commercial trade is reminiscent of today's scientists who tell us why seals and other wildlife species have to be periodically culled ("managed") on a "sustained yield basis" for their own good, in order to provide a continuing source of skins for the fashion industry.

We are shocked to read of the massive commercial slaughter of birds that took place so long ago, but are we any more civilized, more compassionate toward animals today? It is, unfortunately, still true that a species' beauty can bring about its demise, as is demonstrated by the fur industry's use of the spotted cats.

As with the plumage legislation de-

scribed in this book, the fur industry and other commercial interest groups held up effective endangered species legislation in this country for years, until a strong bill was finally passed in 1973.

The slaughter of migratory birds continues over Europe, especially in Italy, where Italian "sportsmen" annually kill some 200 million birds as they migrate from northern Europe to Africa. In America, duck hunters are helping push such species as the black duck, toward the point of no return.

—*Lewis Regenstein*
Executive Vice-President, The Fund for Animals; author of *The Politics of Extinction*

Gettysburg: A Journey in Time
William A. Frassanito
(Scribner's, $12.95)

To the massive literature of the Civil War comes a new examination of the Gettysburg horror made through contemporary photographs, revealing, mainly, that too many pictures and captions accepted at face value were essentially useless as a primary source of authentic information on that critical battle. The photographers were partly responsible, and historians share blame for following their willful or unwitting record.

Photographers? Say Civil War photography and out jumps Mathew Brady like a Polaroid snapshot. Sensitive lover of beauty and truth in tree or man, he and the crew he directed—he was almost blind by then—actually came late to the battlefield, beaten there by his one-time business associate, bushy-bearded Alexander Gardner and team. They arrived about July 5, 1863, two days after the end of the three-day battle, to photograph the last of the mangled dead before burial parties finished shoveling. (As Mr. Frassanito points out, no photographs were taken by anyone of the battle itself.) Gardner was born too soon: Every inclination qualified him to have been outstanding in what later became notorious as tabloid yellow journalism. Since Antietam in September 1862, he had smelled the public appetite and sales value of pictures of men contorted in death agony. Of the 60-odd negatives he produced at Gettysburg, some 75 percent show horrifying groups of the dead, open graves and dead horses. Says Mr. Frassanito, "It is by no means an overstatement to conclude that

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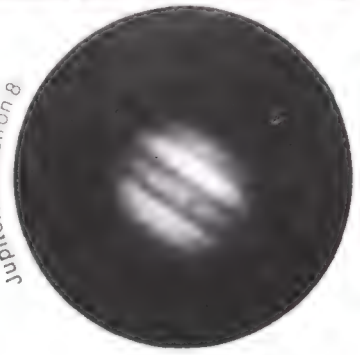
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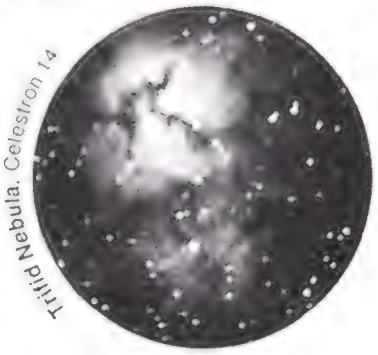
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Gardner's prime concern was to record the horrors of war rather than the area's landmarks. . . ." Such landmarks could be valuable in fixing precise locations of many photographs where backgrounds were critically limited.

Mr. Frassanito, graduate of Gettysburg College, desired *reality* in each photograph. To escort the reader geographically across the battlefield, he used more than 100 Civil War photographs juxtaposed with contemporary views of the same sites, seeking to capture the truth through this "journey in time."

Brady appeared sometime soon after Gardner's departure on July 7, so none of his 30 scenes show the dead. But Brady, "as much as any other photographer, would have been acutely aware of the sales potential such views possessed."

Mr. Frassanito wanted to learn how far the truth is told in all the sequences of pictures, how much "staging" was done, and to clarify the vagueness of so many markings or labels on the negatives. Historians had often damagingly taken the negatives' captions as fact. One caption certainly was in error—just as a glaring example—because in the shot obviously live men posed as dead either for pay or in prank.

The author's investigations, though at times tedious, weave scholarship and fine detective sense. In a complex study of individual pictures, it is established that in some cases the same group of dead were taken from various angles, making them appear to be different casualties. Indeed, one body was moved 40 yards to obtain a better background. So in pursuit of pure truth, how could the viewer know where the soldier fell, or relate fallen men to a particular action? The entire 25 square miles surrounding Gettysburg was a charnel house where death, at that time, was more important than life. One does momentarily wonder how many of the 1,353,847 visitors to the fields in 1974 might care about such facts. But as the author says, the early photograph "provides a dimension to the study of history available nowhere else. Moments in time have been captured and preserved . . . unless such images are gathered, researched, organized and used to the fullest, we will be doing ourselves, as well as the photographers who recorded them, a great injustice."

—*Scott Hart*
Journalist and historian

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Additional reading

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"Two New Particles Found: Physicists Baffled and Delighted," by William D. Metz, *Science,* volume 186, December 6, 1974

"New Particles Excite Experimenters and Puzzle Theorists" by B. G. Levi, *Physics Today,* volume 28, January 1975

"Charmed Lifetime? New Particle, Called the J or Psi Particle," *Scientific American,* volume 232, January 1975

Travel Benefits for Smithsonian Associates

With the growth of the Smithsonian Associates, the Institution is striving to meet the needs of its membership by offering a varied travel program. Traditionally, Foreign Study Tours provided culturally oriented, first-class, specialized trips under the guidance of museum curators or experts in respective fields. Then, Domestic Study Tours were added to offer similar opportunities within the United States, thus allowing Associates and their families a chance to combine vacation with a period of study. (Occasionally, for administrative reasons, Domestic Study Tours will sponsor a trip abroad or Foreign Study Tours will offer a trip within the United States.*) Last Fall, Foreign Charter Tours were introduced; these trips are larger, lower-cost and more generalized in nature. In April we were pleased to announce a new category of travel sponsored by the Division of Performing Arts in cooperation with United Buying Service. These tours are also low-cost, but they are specifically tailored for Associates wanting to concentrate on the performing arts, with an emphasis on the London theater. Travel benefits are announced exclusively in SMITHSONIAN.

Domestic Study Tours

Iceland and Faroe Islands*—August 9-23: Marine biology in Iceland, Westman and Faroe Islands • **Massachusetts Heritage**—August 10-18: Boston, Salem and Deerfield, highlighted by the Berkshire Music Festival • **Williamsburg**—September 3-7: A return to the crafts, architecture and food of Colonial days • **Pacific Northwest**—September 6-16: Forests and national parks in Washington; trips to San Juan Islands and Victoria • **Chesapeake Bay**—September 20-27: Bay history and ecology with stops at Oxford, St. Michaels and Annapolis • **New Hampshire and Coastal Maine**—October 4-12: Nature study at peak of foliage color; Acadia National Park in search of seals; climb Mt. Washington • **All About Gems Weekend**—October 24-26: Dinner in the Hall of Gems; meetings with curators and staff; special tour of gem and mineral collections • In November **Hirshhorn Art Weekend** • **Washington "Anytime" Weekend:** Choose any weekend to visit the nation's capital (all-inclusive price is $59.95 per person based on double occupancy) • In November a **Puerto Rico Botany Study** • Write Domestic Study Tours, Room 1270B A & I, Smithsonian Institution, Washington, D.C. 20560 or call (202) 381-5910. Please make reservations at least 30 days prior to departure date.

Performing Arts Tours

London Theater—August 2-15: Seven performances, backstage visits, seminars • Write Mark Mason, Division of Performing Arts, Smithsonian Institution, Washington, D.C. 20560, or call (202) 381-6365.

Foreign Study Tours

Copenhagen to Lisbon—August 23-September 14: Museum and architecture cruise on *Argonaut;* Kiel Canal, Holland, Belgium; cruise up Seine to Rouen, up Loire to Nantes; visit Burgos and Compostela in Spain. Charles Morgan of Amherst and Dr. Richard Howland of the Smithsonian are lecturers • **Sailing to Byzantium**—September 6-28: From Venice to Beirut, Istanbul, Black Sea ports, Thessaloniki and Athens (shared with Carras/Delian Cruises) • **Hawaiian Islands***—November 8-21: Petroglyphs and natural history • **Around South America**—February 6-March 1: Valparaiso; cruise around Cape Horn to the Carnival in Rio • **Sites of Civilization Cruise**—April 2-24: Sicily, Malta, Tunisia, Egypt and Greece on *Argonaut* • Write Miss Bliss Schumann, Foreign Study Tours, SI 123, Smithsonian Institution, Washington, D.C., or call (202) 381-5520.

Foreign Charter Tours

Russia—December 29-January 12: Russian Winter Festival with visits to Leningrad, Moscow, Tallinn, Vladimir and Suzdal; Hermitage, Tretyakov and Pushkin Museums; Bolshoi and Kirov performances. Sightseeing and "lifeseeing" program includes seminars and tours with skilled guides and interpreters, informal visits with Soviet citizens. Low cost of tour covers first-class hotels, meals, theater performances, seminars, lectures and round-trip air fare from Washington, D.C. Open to Smithsonian Associates only • Write Robert Angle, 1208 A & I, Smithsonian Institution, Washington, D.C. 20560.

Smithsonian Commons Now Open on Weekends
As a result of its overwhelming popularity, the Smithsonian Commons is now open on weekends for Associates and their families. Located in the original Castle building, the Commons offers a buffet luncheon entrée for a fixed price of $3.25, with a reduced rate for children. Beverages and desserts are optional. The Reception Center and dining area provide a place for Associates to obtain information and lunch in a relaxed setting while visiting the national museums on the Mall. Hours are 11:15 A.M. to 2:15 P.M., seven days a week. An Associates' card is required.

Smithsonian highlights

Traveling Exhibition Service
Bicentennial Shows
In recognition of the Bicentennial, the Smithsonian has initiated a new series of traveling exhibitions celebrating aspects of American culture and history. The following exhibits are among those available to your community museums, historical societies or cultural centers. For information on bringing an exhibition to your area, write: Traveling Exhibition Service, Smithsonian Institution, Washington, D.C. 20560.

• Pine Bluff, Arkansas—"The Black Presence in the Era of the American Revolution" is a panel exhibit exploring the role of blacks in the Revolutionary period (June 21-July 20, Civic Center).

• Newark, Delaware—"Blacks in the Westward Movement" is a reproduction of an original exhibition tracing the involvement of blacks in the exploration and expansion of the United States (July 12-August 10, University of Delaware).

• Acton, Massachusetts—"Suiting Everyone" is a panel show tracing the history of ready-made clothing (July 20-August 9, TNT, Inc.).

• Niles, Michigan—"In the Minds and Hearts of the People" is an exhibition of copies of portraits, manuscripts and illustrations documenting the period preceding the Revolution (July 26-August 24, Greater Niles Recreation Board).

• Rochester, Minnesota—"American Coverlets" is a panel exhibit exploring spinning, weaving, dyeing and assembling quilts (July 5-August 3, The Olmsted County Historical Society).

• Hempstead, New York—"Manuscripts of the American Revolution" presents copies of documents and letters of the period (July 1-August 31, Hempstead Bicentennial Commission).

• Portland, Oregon—"Manuscripts of the American Revolution" (July 4-August 3, Oregon Historical Society).

• Halifax, Nova Scotia—"Ride On!" portrays the history of biking through original artifacts and antique bicycles (July 1-13, Nova Scotia Museum).

"Deadwood Dick" painted in 1870s, from "Blacks in the Westward Movement."

Festival of American Folklife
The Festival continues July 2-6 (see June Highlights). The fiddlers' contest and Japanese-American festival will be held July 5, an evening gospel concert July 6. Consult program books available at information kiosks on the Mall for additional listings. For the remainder of July, the Festival's foreign participants from nine countries will tour 40 American cities. For information, write: Old Ways in the New World on Tour, Division of Performing Arts, Smithsonian Institution, Washington, D.C. 20560, or call (202) 381-6535.

Summer Museum Hours
The Arts and Industries, Air and Space, History and Technology and Natural History Buildings are open daily from 10 A.M. to 9 P.M., the National Zoo from 9 A.M. to 6 P.M. Other buildings close at 5:30 P.M.

Renwick Gallery
"Craft Multiples" is an exhibition of 120 handmade crafts chosen from more than 2,300 entries. Each object has been produced in at least ten of the same design. Among the winning works are a pewter letter opener, spinning wheel, traditional tin chandelier, glass and Plexiglas table, stuffed and wooden toys, jewelry, rolling pin, silver blazer buttons and a batik dress. After closing at the Renwick, the exhibition will tour smaller museums, art centers and libraries in towns with populations under 50,000—opens July 4.

Museum of Natural History
Live ants, cockroaches, termites and spiders are among the delights of the Smithsonian "Insect Zoo." Visitors can observe biological aspects of the insects in natural, environmental settings—through Labor Day.

"Walter Jahn Photographs" feature underwater photography of the ocean floor. All the pictures were taken two to five miles beneath the surface—opens July 7, second-floor rotunda gallery.

Touring Performance Service
Programs of music and theater tour the country as an extension of the Smithsonian Division of Performing Arts. For information on how to sponsor a performance in your area, write: Touring Performance Service, Smithsonian Institution, Washington, D.C. 20560.

• Ambler, Pennsylvania—"Around the the World in Eighty Days," performed by the Nicolo Marionettes, July 14, Temple University Music Festival.

• Minneapolis, Minnesota—"Around the World in Eighty Days," July 19-24, and the "American Folklife Company," featuring folk music, July 20-25, both at the Minneapolis Aquatennial festival.

The Smithsonian Institution's 200-page *Report on Endangered and Threatened Plant Species of the United States* has been presented to the Congress with recommendations for the preservation and protection of these species. Included in the report are lists of endangered, threatened, commercially exploited and recently extinct species. A limited number of complimentary copies are available. Write: Endangered Flora Project, Department of Botany, Smithsonian Institution, Washington, D.C. 20560.

National Portrait Gallery

"The Conflict in Payton: the Scopes Trial, July 1925" is an exhibition commemorating the 50th anniversary of the trial with photographs, films and memorabilia—opens July 10.

The Gallery's second major Bicentennial exhibition, "The Dye Is Now Cast: The Road to American Independence, 1774-1776," is a chronicle of the two crucial years leading to the signing of the Declaration of Independence—through November 16.

An anonymous donor has purchased a red, double-decker British bus for the National Portrait Gallery which is being used as a shuttle bus between the Gallery and the Museum of History and Technology. The free daily service begins at 10 A.M. at the Portrait Gallery, 9th and F Streets N.W., and 10:30 A.M. at History and Technology on the Mall. The service continues every 60 minutes throughout the day.

Museum of History and Technology

The continuing exhibit in the newly constructed Hall of Political History is "We The People," a history of American government in three parts: "Of The People" asks who we are and have been in census, symbol and association with the rest of the world; "By The People" demonstrates how we campaign, vote and influence our government; "For The People" portrays the ways our system of government responds to the objectives established in the Constitution. The exhibition is a contemporary restatement of the Smithsonian's political history collection. Four cases of symbols with which the American people have chosen to represent themselves, such as the flag, eagle and Miss Liberty, line the entrance corridor of the exhibition.

Freer Gallery of Art

"Art of the Arab World" is a major exhibition of 80 objects, including ceramics, metalwork, glass, crystal and illuminated pages and paintings from Arabic manuscripts. The show surveys Arabic art from the eighth to the 16th Century. A long-handled bronze incense burner adorned with five domes, a 13th-century brass basin inlaid with silver, and a large brass and silver canteen are among the most beautiful and unusual objects in the exhibition—through December.

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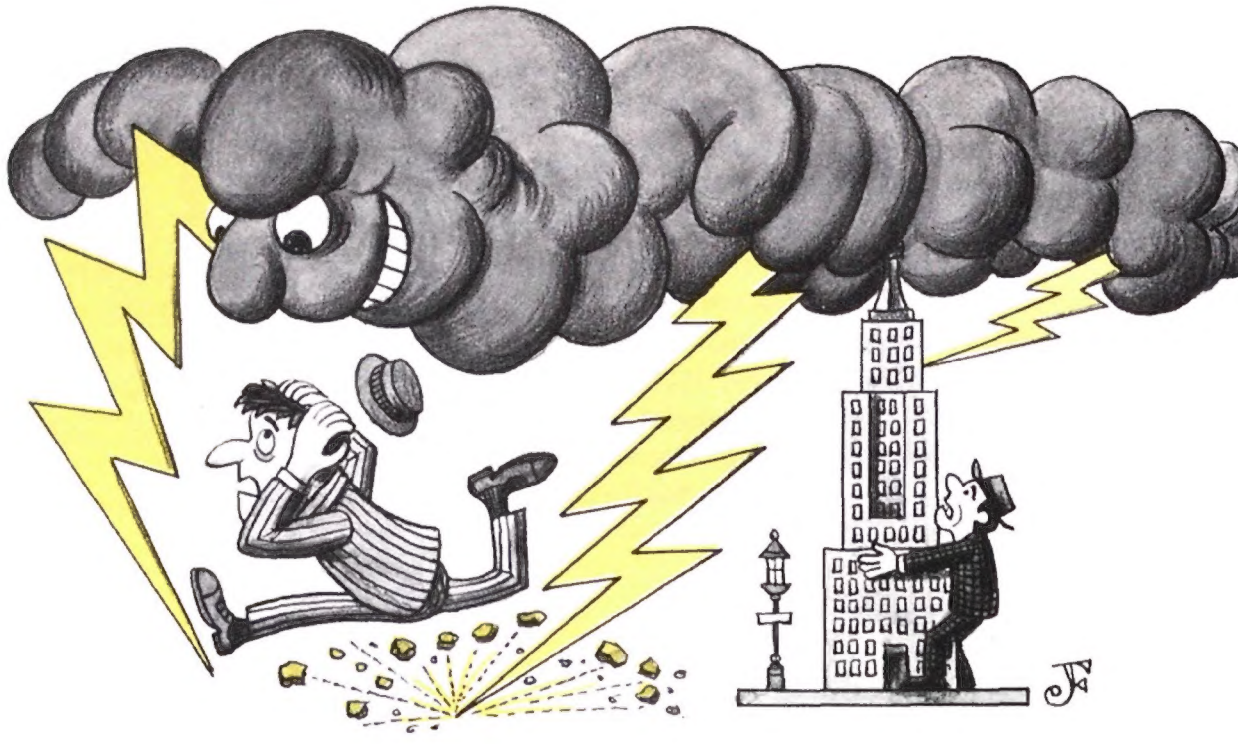
By Patrick Ryan

How to miss getting blitzed by Blitzen



Few portions of life's rich pattern so heavily emphasize human insignificance and the frailty of existence as that of lying awake at three o'clock in the morning and listening to a thunderstorm booming Armageddon about the television aerial—even though you may have the bedclothes tucked ever so firmly over your head. The fears aroused when the heavens go fortissimo find roots in atavistic memories of bygone days when the sound of thunder was popularly regarded as the admonitory voice of a senior god. And despite modern, scientific assurance about the actual, climatic causes of thunder, those of us unfortunately burdened with dilapidated consciences can never quite dismiss the midnight qualm that divine disapproval of our general conduct is being expressed.

At such points of repentant panic, I usually wake up my wife—who can sleep through earthquakes—to apologize before it's too late for any recent neglect in deed or thought by which I may have inadvertently mildewed the magic of our marriage. Her replies, when finally aroused to full alarm, can sometimes be of such blistering vehemence that I wonder whether it wouldn't be preferable just to be struck by lightning.

Since, however, the main path of a lightning stroke is only a few inches wide, the odds against any flash connecting with flesh are up in the millions-to-one. Even so, should you be out of bed and exposed in the great outdoors during a thunderstorm, it would be sensible to follow the mellifluous advice given by Mr. Bing Crosby, when promising us pennies from heaven, to the effect that "When it starts to thunder, don't run under a tree!" Such counsel has been confirmed by the U.S. Forest Service in reporting that some 10,000 forest fires a year are started by lightning strikes in their domains. Lightning, of course, has a predilection for upstanding objects, preferring metal ones when available as providing the faster route to earth.

With such principles in mind and after due statistical research, professional advice has come from the Johns Hopkins School of Medicine that if you are caught in the open in a severe thunderstorm, in addition to obeying Bing, you should "cast away fishing rods and golf clubs, and even your umbrella. Don't run, don't telephone, don't go swimming. . . . Lie flat on the ground in the open, preferably on a rubber raincoat." You will thus lessen your chances of being struck by lightning —although the resultant bout of pneumonia may do for you just as decisively in the end.

Although the immediate impact of being struck by lightning may be readily apparent, its effect on the recipient's fortunes can be capricious.

Samuel Pepys recorded on June 26, 1663, an ephemeral improvement of condition when "a Genoese gally in the Leghorn Roads was struck by thunder so as the mast was broke apieces, and the shackle upon one of the slaves was melted clear off of his leg without hurting his leg." Sadly, however, instead of acceding to suggestions that he should release the slave "whom Heaven had thus set free," the ship's captain, clearly a man of hard business, merely sent for his blacksmith and fitted the relevant oarsman with a new fetter.

Less obvious terrestrial luck attended three East African evangelists, known as God's Favourite Children, who were struck dead by lightning while devoutly conducting a revival meeting at Oyo, Nigeria. This triple event can be accepted, according to one's lights, either as an example of fickle, deistic ingratitude for considerable piety rendered, or as joyous confirmation that the trio's earthly name was so apt as to require their presence in Paradise forthwith.

Adolf Hitler was reputed to have found pleasure in contemplating *Donner und Blitzen* detonating among the mountain peaks surrounding his eagle's nest at Berchtesgaden.

Plutarch reports that the puritan, Marcus Cato, in the process of officially turning out of the senate one Manilius because he kissed his wife in daytime and within sight of his daughter, proclaimed with ascetic pride that he never embraced his own wife unless it thundered loudly. It was a pleasantry of his to remark that he was a happy man when it thundered. Plutarch didn't record just how Mrs. Cato arranged for her rightful portions of bliss between thunderstorms. But if there are any women today who are similarly hitched to austere, uptight husbands turned on only by thunderstorms, then they might well consider moving house to Bogor, Java, where, on the average, there is thunder on 322 days of the year.

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